
**Carpinteria Shoreline
Santa Barbara County, California**

**Feasibility Study
Project Management Plan**

June 2003



**U.S. Army Corps of Engineers
Los Angeles District
911 Wilshire Boulevard
Los Angeles, California 90017-3401**

CARPINTERIA SHORELINE FEASIBILITY STUDY

PROJECT MANAGEMENT PLAN

TABLE OF CONTENTS

SECTION 1 – INTRODUCTION TO THE FEASIBILITY STUDY	5
SECTION 2 - DESCRIPTION OF THE STUDY AREA	6
SECTION 3 - FOCUS OF FEASIBILITY STUDY.....	10
3.1 STUDY AUTHORITY	10
3.2 RESULTS OF RECONNAISSANCE STUDY	10
3.3 PROJECT PURPOSE.....	11
3.4 FEASIBILITY STUDY PURPOSE.....	12
3.5 FEASIBILITY STUDY SCOPE.....	12
3.5.1 Public concerns	12
3.5.2 Problem and Needs	12
3.5.3 Planning Objectives	13
3.5.4 National Objectives	13
3.5.5 Management Measures.....	13
3.5.6 Preliminary Alternatives	15
3.5.7 Level of Detail	16
3.6 CONCLUSIONS.....	17
3.7 RECOMMENDATIONS	17
SECTION 4 - MANAGEMENT OF STUDY.....	18
4.1 PROJECT REVIEW BOARDS (PRB'S)	18
4.2 EXECUTIVE COMMITTEE	18
4.3 PROJECT DELIVERY TEAM (PDT)	19
SECTION 5 - TECHNICAL REQUIREMENTS.....	20
SECTION 6 - STUDY PROGRAM	21
6.1 WORK TASKS AND RESPONSIBILITIES	21
6.2 ENGINEERING STUDIES.....	24
6.2.1 General.....	24
6.2.2 Engineering Aspects.....	24
6.2.3 Geotechnical Studies	25
6.2.4 Basis for Design	26
6.2.5 Coastal Engineering and Design Analysis	26
6.3 ECONOMIC STUDIES REPORT.....	29
6.3.1 Social and Economic Aspects.....	30
6.3.2 Economic Criteria	32
6.3.3 Coastal Engineering Input	32
6.3.4 Determination of Feasible Alternatives.....	33
6.4 REAL ESTATE STUDIES.....	34
6.5 ENVIRONMENTAL STUDIES.....	35
6.5.1 Environmental Criteria	35

6.5.2 Environmental Aspects	35
6.5.3 Environmental Analysis.....	35
6.5.4 Endangered Species	36
6.5.5 Fish and Wildlife Coordination and Report	36
6.5.6 Water Quality	37
6.5.7 Hazardous Toxic Radioactive Waste (HTRW)/Contaminated Sediments Report.....	37
6.5.8 Cultural Resources Report	37
6.6 COST ENGINEERING STUDIES	38
6.6.1 Costs	38
6.7 PUBLIC INVOLVEMENT DOCUMENTS	39
6.8 PLAN FORMULATION.....	40
6.8.1 Planning Process.....	40
6.8.2 Scope and Task.....	40
6.9 DETAILED STUDY REPORT	41
6.9.1 Preliminary Reports	41
6.9.2 Draft Report Documentation	41
6.9.3 Final Report Documentation	42
6.10 STUDY MANAGEMENT.....	43
6.11 PROGRAM MANAGEMENT and DEVELOPMENT	43
6.11.1 Updates of PMP	44
6.11.2 Project Management Plan (PMP)	44
6.11.3 Program and Project Management Documents	44
6.12 SPONSOR'S TASKS	45
SECTION 7 -QUALITY CONTROL.....	46
7.1 GUIDELINES.....	46
7.2 ROSTER OF THE STUDY TEAM AND TECHNICAL REVIEW TEAM	46
7.3 LIST OF DOCUMENTS TO BE REVIEWED BY TECHNICAL REVIEW TEAM	46
7.4 MILESTONES AND SCHEDULE FOR REVIEW ACTIVITIES	46
7.5 REVIEW DOCUMENTATION	47
7.6 CERTIFICATION OF TECHNICAL AND LEGAL REVIEW	47
7.7 COST ESTIMATE FOR TECHNICAL REVIEW.....	47
SECTION 8 -STUDY COST ESTIMATE	48
SECTION 9 -MILESTONES AND STUDY SCHEDULE	49
9.1 DESCRIPTION OF MILESTONE	49
9.1.1 Initiate Feasibility Study (F1)	49
9.1.2 Public Workshop (F2)	49
9.1.3 Progress Review Conference (F3).....	49
9.1.4 Alternatives Evaluation Conference (F4).....	49
9.1.5 Alternative Formulation Briefing (AFB)	50
9.1.6 Submit Draft Report to SPD (F5)	50
9.1.7 Feasibility Review Conference (FRC).....	50
9.1.8 Field Level Coordination (F6)	51
9.1.9 Final Public Meeting (F7).....	51
9.1.10 Submit Final Report to SPD (F8).....	51
9.1.11 Division Engineer Public Notice (F9).....	51
9.2 FEASIBILITY STUDY MILESTONE SCHEDULE.....	51
STATEMENT OF CERTIFICATION.....	53

LIST OF TABLES

Table 3-1. Annual Costs and Benefits	11
Table 3-2. Alternatives.....	11
Table 6-1. Work Breakdown Structure	22
Table 6-2. Average Annual Project Costs.....	25
Table 1. Geotechnical Studies.....	25
Table 2. Coastal Engineering Studies	28
Table 4. Economic Studies.....	29
Table 6-2. Annual Damages to Structures	31
Table 6-3. Annual Damages and Recreational Value	31
Table 5. Real Estate.....	34
Table 6. Environmental Studies	37
Table 7. Cost Engineering.....	39
Table 8. Public Involvement Studies	39
Table 9. Plan Formulation Studies	41
Table 10. Detailed Study Report.....	42
Table 11. Study Management	43
Table 12. Program Management	44
Table 13. Project Management	44
Table 14. Program Development	45
Table 15. Feasibility Study Cost Estimate	48
Table 16. Feasibility Study Milestone Schedule.....	52

LIST OF FIGURES

Figure 1 Location Map	7
Figure 2 Winter Conditions.....	8
Figure 3 Study Area	9
Figure 4 Study Map.....	34

LIST OF APPENDICES

Appendix A - Gantt Charts	54
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SECTION 1 – INTRODUCTION TO THE FEASIBILITY STUDY

The purpose of the Project Management Plan (PMP) is to identify work activities, efforts required, schedules, costs and sources of funding required to conduct the Feasibility Study. The study will assess feasible measures to reduce storm damages to existing development and possibly public facilities.

The PMP summarizes the scope, schedule, cost and responsibility of activities to formulate and evaluate alternative plans; reach decisions for plan recommendation; identify implementation requirements for a selected plan; and complete the required reports and reviews necessary for approval of the study documents.

The PMP defines Federal and non-Federal requirements for implementing the study, and serves as the basis for assigning responsibilities and values for cash and in-kind contributions of the non-Federal Sponsor, the State of California through the Assembly Bill 64 financial agreement (referred to as the "Local Sponsor"). The study is authorized under Section 208 of the Flood Control Act of 1965 as amended. Congressional energy and water development appropriations bill HR 21-22 (1995) provided funds for the Secretary of the Army, acting through the Chief of Engineers, to initiate a reconnaissance study.

The PMP was prepared in accordance with South Pacific Division (SPD) Project Delivery Model dated September 2000, SPD Project Management Business Process dated February 2000, and other Corps of Engineers guidelines. It is organized to serve as the program document committed to by the Corps and City of Carpinteria in accomplishing the Feasibility Study in accordance with the Feasibility Cost Sharing Agreement. The PMP also provides the direction for the ongoing day-to-day study effort and management by the study team members.

The PMP is a living document that is periodically updated and revised as necessary as the study progresses and study findings require adjustments to the study program as agreed to by the Executive Committee. Each study team member receives a copy of this PMP and any updates.

SECTION 2 - DESCRIPTION OF THE STUDY AREA

The City of Carpinteria, which was incorporated in 1965, is located on the Santa Barbara County Coast some 80 miles upcoast of Los Angeles, 15 miles upcoast of Ventura, and 12 miles downcoast of Santa Barbara. Carpinteria covers some 3 square-miles, with a 1,735 miles shoreline situated along the Santa Barbara Channel. With a population of about 15,949, the City is the centerpiece of the 13 square-miles Carpinteria Valley. Population growth rates have slowed in Santa Barbara County since 1990. The population growth in the City of Carpinteria averaged 1.1% per year from 1994 to 1999, when it was estimated to be 14,950. The Valley, with a population of more than 19,000, features a mild climate, scenic environment and proximity to major urban centers.

Carpinteria is home to a popular surfing area, Rincon Point, and two well-used swimming beaches – Carpinteria City Beach and Carpinteria State Beach. The 1,500 feet long City Beach is narrow, covering an area of approximately 52,625 square-yards. City officials have estimated the total annual beach visitation at more than 550,000 – some 250,000 during the summer season and more than 300,000 during the remainder of the year.

The coastal setting and favorable climate of the beaches along the Santa Barbara Channel have influenced the development of the shoreline areas of Santa Barbara and Ventura Counties. Since the early 1930s, population has steadily increased in the Santa Barbara--Ventura/Oxnard metroplex to the point today where the area has become considerably urbanized.

Figure 1 shows location map, Figure 2 shows two photographs of Carpinteria City Beach at winter conditions, and Figure 3 shows the study area.

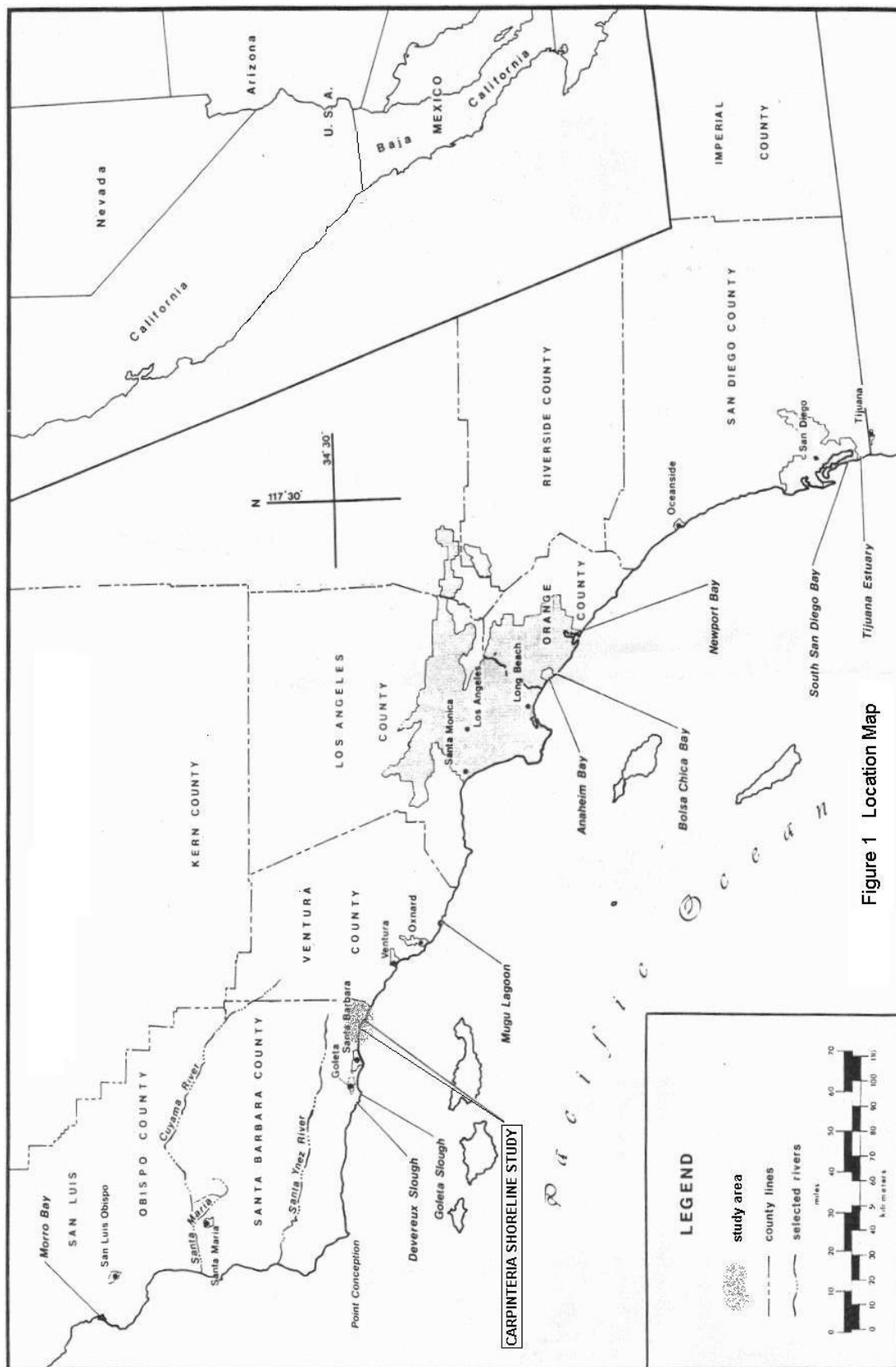


Figure 1 Location Map



December 2002
Figure 2
Winter Conditions at Carpinteria

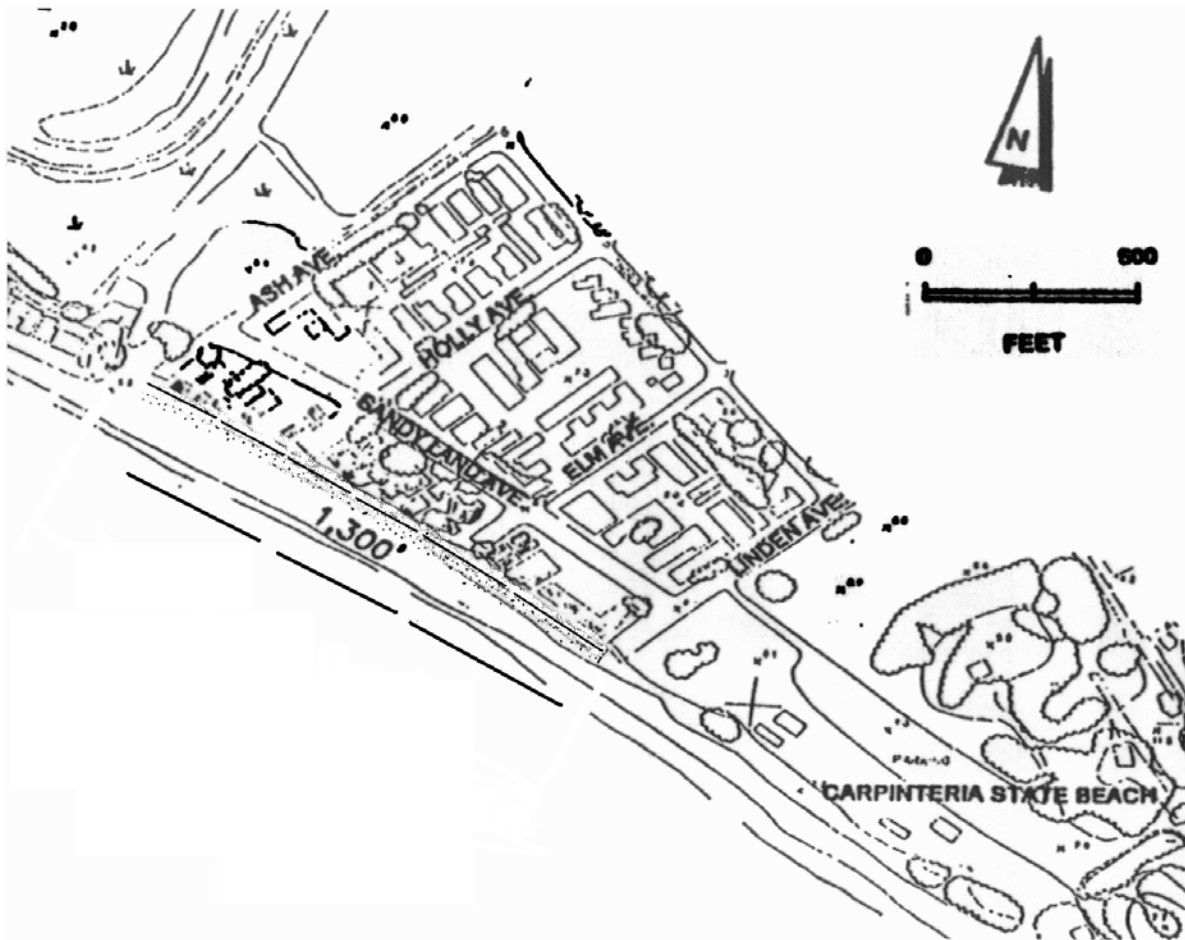


Figure 3
Study Area
(Between Ash Avenue and Linden Avenue)

SECTION 3 - FOCUS OF FEASIBILITY STUDY

3.1 STUDY AUTHORITY

This study falls specifically under Section 208 of the Flood Control Act of 1965 as amended. Congressional energy and water development appropriations bill HR 21-22(1995) provided funds for the Secretary of the Army, acting through the Chief of Engineers, to initiate a reconnaissance study.

3.2 RESULTS OF RECONNAISSANCE STUDY

The major findings of the report are:

a) Field visits and reviews of existing data indicate that there clearly are problems involving erosion of the shoreline of the City of Carpinteria. Investigations indicate that this shoreline erosion threatens 13 family structures on the shoreline. The 1995 event caused some \$369,000 in damages to shoreline structures. A Reconnaissance Report estimated the long-term erosion rate for the Carpinteria Shoreline at 6 feet per year. It is estimated that some 13 family structures along the Carpinteria Shoreline would be destroyed by 2013 if losses of shoreline continue.

b) The southern Santa Barbara County and northern Ventura County coast is generally characterized by narrow beaches with relatively thin sediment cover backed by cliffs. The coastal segments are oriented in a general east-west alignment east of Point Conception. This departure in shoreline configuration, along with the east-west trending Channel Islands which form the southern boundary of the Santa Barbara Basin, results in a different sedimentation-erosion zone within the Santa Barbara Channel. The beaches are sheltered from the dominant northwesterly ocean waves and protected as well from the less frequently occurring southerly storm swells. The cumulative effects of these differences result in a semi-protected shoreline with an almost unidirectional alongshore transport component.

c) The beaches undergo seasonal profile changes. The shoreline will retreat in the winter months as more intense storm waves remove sand from the beach and deposit it in offshore bars. The variation is proportional to the existing berm widths within the study area. The narrow sandy beaches west of the Ventura River show seasonal variations generally within the 50 foot range with few exceptions. Within the broader reaches of the Oxnard Plain, the wider beaches fluctuate within an approximate average distance of 100 feet.

d) The study area lies within a portion of the Transverse Range geologic province. The regional geology is defined by the Santa Ynez Mountains to the west of the Ventura River and the expanse of the Ventura sedimentary basin that extends from Ventura to Point Mugu. The Santa Ynez Mountains consist of thick sections of Quaternary and Tertiary rocks. Rock material that is capable of yielding sand sized sediment to the littoral system includes the Martinez, Domengine, Modelo, Repetto, Pico, and Pleistocene formations.

e) The amendments to the 1997 Reconnaissance Report indicated that there is the potential for significant storm damages to existing private development and possibly public facilities along the 1,500 foot reach stretching from Linden Avenue up to Ash Avenue in the City of Carpinteria. It is estimated that average annual damages in this damage area are about \$469,900 -- \$10,800 resulting from wave impact damage, and \$459,100 from shoreline erosion.

f) Five alternatives: 1a.) Beach Nourishment with two year renourishment period; 1b.) Beach Nourishment with five year renourishment period; 2a.) Artificial Reef Submerged Breakwater (ARSB) with one segment; 2b.) Artificial Reef Submerged Breakwater with three segments; and 3.) Seawalls were developed to reduce storm damage potential in the City of

Carpinteria damage area. These alternatives were evaluated based on economic and environmental criteria and existing policy and guidance defining Federal interest in providing shore protection. It is concluded 1a.) Beach Nourishment with two year renourishment period; 1b.) Beach Nourishment with five year renourishment period; 2a.) Artificial Reef Submerged Breakwater (ARSB) with one segment; 2b.) Artificial Reef Submerged Breakwater with three segments; and 3.) Seawall meets the Federal project requirements.

g) The City of Carpinteria expresses their support for the feasibility study indicating their commitment to share the cost on a 50%-50% basis provided by the Federal Government and by Non-Federal interests.

Table 3-1 Total Annual Costs and Benefits

Alternatives	First Costs	Beach Nourishment	Total Annual Costs	Total Annual Benefits	Benefit-to-Cost Ratio
1a. Beach Nourishment with 2-yr renourishment period	\$2,383,800	\$14,446,600	\$1,049,900	\$857,600	0.8-to-1
1b. Beach Nourishment with 5-yr renourishment period	\$2,383,800	\$3,185,700	\$347,900	\$857,600	2.5-to-1
2a. ARSB with one segment	\$4,675,700	\$0	\$292,900	\$857,600	2.9-to-1
2b. ARSB with three segments	\$10,952,800	\$0	\$701,000	\$857,600	1.2-to-1
3. Seawall	\$4,840,300	\$0	\$307,600	\$469,900	1.5-to-1

Table 3-2 Alternatives

Alternatives	Recreation Benefits	Reduction Wave Damages	Construction Cost	Interest During Construction	Gross Investment
1a. Beach Nourishment with 2-yr cycle	\$428,000	(-\$30,300)	\$2,383,793	\$11,400	\$16,841,800
1b. Beach Nourishment with 5-yr cycle	\$428,000	(-\$30,300)	\$2,383,793	\$11,400	\$5,580,900
2a. ARSB with one segment	\$428,000	(-\$30,300)	\$4,675,704	\$22,300	\$4,698,000
2b. ARSB with three segments	\$428,000	(-\$30,000)	\$10,952,751	\$291,900	\$11,279,930
3. Seawall	\$0	\$10,800	\$4,840,256	\$93,400	\$4,936,932

3.3 PROJECT PURPOSE

Based on the findings of the amended Santa Barbara County Reconnaissance Report, the feasibility study will focus on further development of a plan to mitigate downcoast erosion impacts and investigation of measures to include beachfill and shoreline stabilization structures to provide storm damage and shoreline protection. The plan developed will be technically complete, providing for all required features for implementing the project needed to realize benefits, as well as avoiding or minimizing undesirable impacts. The plans will also include any mitigation to avoid or minimize adverse impacts to the environment that may be caused by the project requirements.

3.4 FEASIBILITY STUDY PURPOSE

The intent of the feasibility study is to further develop and define a plan of improvements that best satisfies specific planning objectives. It involves further analysis of the study area's present and future conditions, problems and needs, and establishing more specifically the planning objectives to be used to guide the formulation of alternative plans. The feasibility study will develop and evaluate the viable alternative plans based on established criteria including national economic development, environmental quality, and regional economic and other social effects towards selecting the best plan for implementation. The feasibility study will identify the National Economic Development (NED) plan based on the alternative plan which attains the highest net benefits of all acceptable and feasible alternatives.

A locally preferred plan may also be identified (if different from the NED plan). Federal cost sharing will be based upon the NED plan. Based on the results of these studies, and coordination of the findings with interested Federal and non-Federal agencies and other public interests, a plan will be selected for proposed implementation.

The feasibility study will also include sufficient engineering and design of project features to prepare the baseline cost estimate, and to develop a design and construction schedule for implementing the selected plan.

The feasibility study will also define Federal and non-Federal requirements for implementing the selected plan to include cost-sharing responsibilities, the project obligations of the Corps and the Local Sponsor in accordance with the Water Resources Development Act of 1986, and other Federal laws, policies, and guidelines.

3.5 FEASIBILITY STUDY SCOPE

The scope of the feasibility study has been developed to meet the above stated purposes based on full consideration of available information. The scope of studies covers the engineering, economic, environmental, real estate, plan formulation and other studies needed for further defining problems and needs and developing and evaluating viable alternative plans towards selection of a plan for implementation. The following presents general considerations and assumptions applied in developing the scope of the feasibility study.

3.5.1 Public Concerns

Public concerns are perceptions about existing problems or needs and their desires for improvements to facilities that they use or which affect them. By eliciting information from the public, subsequent planning efforts can be directed to respond to these perceptions and desires. Public concerns may be expressed directly, such as at a public meeting, or indirectly through government representatives and agencies. Concerns are expressed through public meetings and workshops with public, private and commercial interest groups. Additional comments were obtained through input and coordination with representatives of government agencies and the general public.

The primary vehicle for receiving public concerns regarding the Santa Barbara and Ventura County's Shoreline were two public workshops held on June 12 and 13, 1996, in the cities of Port Hueneme and Carpinteria. Concerns expressed at the meetings focused on the reduction of coastal storm flooding, wave and beach erosion damages, and the desire for the placement of additional sand on beaches for storm protection and recreation. The preservation and enhancement of recreation opportunities was also a primary concern.

3.5.2 Problems and Needs

Problems and needs associated with significant shoreline erosion and storm damage along the highly urbanized southern segment of the Santa Barbara County Shoreline have been identified in previous studies and reports and at public workshops.

Different management measures have been discussed for storm damage reduction. The different measures include shoreline protection methods, beach stabilization structures, sediment-blocking structures, detached wave-blocking and diffraction structures and wave refraction structures.

The feasibility study will focus on problems and needs for mitigating the coastal flooding and wave related damages at the low-lying beach communities of Carpinteria.

3.5.3 Planning Objectives

The planning objectives for the Carpinteria Shoreline Study reflect the concerns expressed by county officials, constituent cities, beach users, and other non-Federal interests. The planning objectives are as follows:

1. To provide storm damage protection and shoreline protection related for potential damage to public and private properties.
2. To restore and improve the area's beaches with respect to their recreational value.

Damage analysis for without-project conditions has indicated that the most critical reach is within Carpinteria shoreline. Accordingly, the planning objectives were developed to mitigate coastal flooding and storm damages that occur within this reach.

3.5.4 National Objectives

Federal, and Federally assisted water and related land planning activities attempt to achieve a National Economic Development (NED) plan. Contributions to NED are increases in the net value of the national output of goods and services, expressed in monetary units. Plans are formulated to alleviate problems and take advantage of opportunities in ways that contribute to the NED objective.

3.5.5 Management Measures

Shoreline Protection Methods

Traditional methods to eliminate or reduce coastal storm damages and shoreline erosion include seawalls, beach nourishment and an artificial reef submerged breakwater. Seawalls are placed parallel to the shoreline as a last line of defense to protect adjacent land areas from direct wave attack, flooding and erosion. As such, they often provide the most reliable form of shoreline protection.

Beach nourishment involves placement of compatible sand from a distant borrow area to effectively widen the beach. The increased sand buffer distance accommodates short-term sediment losses so that storm waves and runup dissipate over the wider fill profile. Long-term losses and erosion are addressed through periodic nourishment of the fill to preserve its intended protective width feature. Consideration of nearshore sand berms may provide a more economical means to maintain placed fills, but direct placement of sand on the existing beaches to provide more storm protection buffer is often the method of choice for enhancing existing shorelines.

Artificial Reef Submerged Breakwaters (ARSB) are massive structures placed offshore which are designed to protect shore areas from direct wave action. The structures dissipate

incident storm waves such that the transmitted energy is reduced to less damaging levels along the sheltered beach segment. The artificial reef submerged breakwater may be designed with crest elevations below water surface to reduce the effects of their visual presence. An alternative submerged breakwater technique includes nearshore sand berms ("soft" breakwaters) that are constructed of dredged sand placed parallel to the beach in shallow water. The "soft" breakwater reduces incident wave height, and gradual onshore migration of the sediment can contribute toward renourishment of the contiguous shoreline.

Innovative shoreline stabilization techniques may be considered to advance unique methodologies to create more "natural" solutions to shoreline erosion management. The concept entails the duplication of structures that replicate features that are successful in maintaining wide beaches, and that may be perceived as being more environmentally suitable for the littoral system.

Beach Stabilization Structures

Beach stabilization structures interact with waves, affect the alongshore movement of sediment, and elicit a beach response. The mechanism and response varies depending on the type of structure. All function to increase in the mean width of the local beach. A reduction in the beach recession rate is therefore a common of all of them. Conditions under which one type of structure will be successful could cause another to fail. To eliminate downcoast problems, all require the placement of beach fill in the amount necessary to establish an equilibrium platform. Even then, some may contribute to downcoast erosion until the shoreline retreats to a more landward position.

Sediment-blocking Structures

Sediment-blocking structures are essentially shore-normal, two-dimensional features. By modifying the alongshore movement of sediment, they act to maintain a wide upcoast beach in the form of a fillet. Most artificial sediment-blocking structures are high and impermeable. Almost all sediment passes around their seaward ends. The width of the beach and the upcoast length of the fillet are controlled by the length of the structure and the character of the alongshore sediment transport regime.

Natural illustrations of sediment-blocking structures are headlands and high, shore-connected reefs. Prominent headlands in Laguna Beach, on the Palos Verdes Peninsula, and at Point Mugu, Point Dume, and Lechusa Point in Malibu, are excellent examples in southern California. Artificial sediment-blocking structures include groins, jetties, and shore-normal harbor breakwaters. Successful structures are the Will Rogers groins at Pacific Palisades, the jetties at the entrances to Marina del Rey, Newport Harbor, King Harbor, and at the mouth of the Santa Ana River, and the upcoast breakwaters at Santa Barbara and Oceanside Harbors.

Detached Wave-blocking and Diffraction Structures

Detached, wave blocking and diffraction structures are located seaward of the regional trend of the shoreline. These primarily shore-parallel and two-dimensional features absorb some or all the wave energy that reaches them, and diffract waves around their ends. Most artificial wave-blocking structures pierce the water surface and allow only a modest transmission of energy through or over them. A salient or tombolo is formed in their lee.

An excellent example of a natural detached, wave-blocking and diffraction structure is Sand Point Reef off Sandyland near Carpinteria. Approximately two miles of salient barrier spit formed in the lee of this structure. Perhaps the most successful human-made detached, wave-blocking and diffraction structure in the United States is the Santa Monica Breakwater, which

created a large sediment-blocking salient that has created a 5.6 kilometer-long fillet upcoast.

Shore-connected, Wave-blocking and Diffraction Structures

Shore-connected, wave-blocking and diffraction structures are numerous along the California coast. In natural form, these mostly shore-normal, two-dimensional features are found in all sizes. Their impact differs in location and shape of the responding beach from that of a detached wave-blocking and diffraction structure. Where a detached wave-blocking and diffraction structure will function to advance the beach in its lee, the action of a shore-connected wave blocking and diffraction structures so they may also function as sediment-blocking structures.

Examples include the Point San Luis headland, which controls the 40-kilometer-long, hook-shaped Pismo Beach Littoral Cell, Point Fermin and its controlled hook-shaped San Pedro Littoral Cell; and Point Loma, which controls the hook-shaped Silver Strand Littoral Cell in San Diego County.

3.5.6 Preliminary Alternatives

The range of identified problems along the Carpinteria Shoreline implies that tangible protection of existing development and infrastructure can be most directly achieved with seawalls or artificial reef submerged breakwater (ARSB). Widening existing beaches or constructing offshore attenuation devices can more indirectly achieve coastal storm wave and flood protection.

Beach nourishment plans can effectively buffer the affected development from storm waves and high tides. However, the unique unidirectional character of the regions alongshore transport implies that some form of structural stabilization may be necessary to prolong the effects of the artificially placed sand. Feasible methods include use of groins and offshore breakwaters.

Traditional offshore breakwater structures generally are considered less feasible for southern California coastline sites because of the technical, economic and environmental problems that would likely be associated with their implementation. However, recent planning studies by the San Diego Association of Governments (SANDAG) have acknowledged that limited applications could be specified to enhance existing locations of high-use recreation (Flick, 1994). Within the study area, the apparent magnitude of cross shore and alongshore sand movement suggests that stabilization of beaches using offshore structures may be required to successfully stem shoreline losses.

In summary, conceptual feasible alternatives to prevent erosion and to reduce coastal storm damage within the Carpinteria Shoreline are the following measures: 1a.) Beach Nourishment with two year renourishment period; 1b.) Beach Nourishment with five year renourishment period; 2a.) Artificial Reef Submerged Breakwater (ARSB) with one segment; 2b.) Artificial Reef Submerged Breakwater with three segments; and 3.) Seawalls.

Alternative 1a – Beach Nourishment

- Beach nourishment with 270,000 cubic yards of sand along 1,300 feet of beach adding 220 feet width, tapering over 1,000 feet to both east and west to the existing shoreline.
- Construction of a 78,000 square feet vegetated sand dune along the central 1,300 feet of beach.
- Periodic beach nourishment of 88,000 cubic yards of sand every two years.

Alternative 1b – Beach Nourishment

- Beach nourishment with 270,000 cubic yards of sand along 1,300 feet of beach adding
- 220 feet width, tapering over 1,000 feet to both east and west to the existing shoreline.
- Construction of a 78,000 square feet vegetated sand dune along the central 1,300 feet of beach.
- Periodic beach nourishment of 132,000 cubic yards of sand every five years.

Alternative 2a – ARSB

- Construction of 1(one)-1,000 feet long submerged rubble mound breakwaters parallel to shore at a water depth of minus 20 feet MLLW and a crest elevation of minus 6 feet MLLW.
- Initial beach nourishment of 135,000 cubic yards of sand along 1,300 feet of beach, tapering back 1,000 feet to east and west to the existing shoreline.
- Construction of a 78,000 square feet vegetated sand dune along the central 1,300 feet of beach.

Alternative 2b – ARSB

- Construction of 3(three)-1,000 feet long submerged rubble mound breakwaters parallel to shore at a water depth of minus 20 feet MLLW and a crest elevation of minus 6 feet MLLW, with 500 feet gaps between units.
- Initial beach nourishment of 135,000 cubic yards of sand along 1,300 feet of beach, tapering back 1,000 feet to east and west to the existing shoreline.
- Construction of a 78,000 square feet vegetated sand dune along the central 1,300 feet of beach.

Alternative 3 – Reinforced Concrete Seawall

- Construction of a 1,500 feet long reinforced concrete seawall approximately 120 feet seaward of the beachfront structures with a crest elevation of plus 17 feet MLLW rising 3 feet high above the beach surface and to a depth of approximately minus 12 feet MLLW;
- Initial beach nourishment of 110,000 cubic yards of sand along 1,300 feet of beach, tapering 1,000 feet to both east and west to the existing shoreline and construction of sand dune with low crest elevation along the central 1,500 feet of the beach.

3.5.7 Level of Detail

A certain level of detail will be necessary to identify the feature requirements for the NED plan. The amount of detail in the engineering, real estate, economic and environmental studies shall be of sufficient detail to allow for all requirements of the alternative plans as well as associated costs, benefits, and impacts to be adequately considered and effectively compared between alternatives in reaching a decision on a recommended plan. The level of detail of design for the recommended plan will be adequate to define all work requirements related to implementing the recommended plan using the Corps of Engineers MCACES estimating methods. These cost estimating methods will be applied to establish the baseline cost estimate for project implementation.

3.6 CONCLUSIONS

It is concluded that there is the potential for significant storm damages to existing private development and possibly public facilities along the 1,500 feet reach stretching from Linden Avenue up to Ash Avenue in the City of Carpinteria. It is estimated that average annual damages in this damage area are about \$469,900 -- \$10,800 resulting from wave impact damage, and \$459,100 from shoreline erosion.

Five alternatives: 1a.) Beach Nourishment with two year renourishment period; 1b.) Beach Nourishment with five year renourishment period; 2a.) Artificial Reef Submerged Breakwater (ARSB) with one segment; 2b.) Artificial Reef Submerged Breakwater with three segments; and 3.) Seawalls were developed to reduce storm damage potential in the City of Carpinteria damage area. These alternatives were evaluated based on economic and environmental criteria and existing policy and guidance defining Federal interest in providing shore protection. It is concluded 1a.) Beach Nourishment with two year renourishment period; 1b.) Beach Nourishment with five year renourishment period; 2a.) Artificial Reef Submerged Breakwater (ARSB) with one segment; 2b.) Artificial Reef Submerged Breakwater with three segments; and 3.) Seawall meets the Federal project requirements.

The feasibility phase report will be conducted within 42 months at a cost of \$2,200,000. The study costs will be shared on a 50%-50% basis -- \$1,100,000 provided by the Federal Government and \$1,100,000 by non-Federal interests.

3.7 RECOMMENDATIONS

The Santa Barbara and Ventura Counties Shoreline Reconnaissance study findings indicate there are several communities along the Ventura and Santa Barbara counties with potential for major storm damages to coastal developments. As a result of this study, the City of Carpinteria has expressed interest in participating in the feasibility study.

The City of Carpinteria expresses their support for the Carpinteria Shoreline Feasibility Study in their letter of intent dated November 25, 2002 indicating their commitment to share the cost of the feasibility study on a 50%-50% basis.

Therefore, I recommend that the Carpinteria Shoreline Study proceed into the feasibility phase.

Richard G. Thompson
Colonel, US Army
District Engineer

SECTION 4 - MANAGEMENT OF STUDY

The study will be managed at three basic levels: Corps Project Review Boards (PRB's), Executive Committee, and the Project Delivery Team (PDT). The following is a description of each. The Local Sponsor will participate in all study management levels. In order to manage this cost-shared study, an Executive Committee and an PDT will be formed. This management structure will be formalized in the Feasibility Cost-Sharing Agreement (FCSA).

4.1 PROJECT REVIEW BOARDS (PRB'S)

PRB's have been established at three levels within the Corps to evaluate the status and progress on all studies, projects, and programs. One PRB includes Headquarters of U.S. Army Corps of Engineers in Washington, D.C. (HQUSACE). The HQUSACE PRB is chaired by the Director of Civil Works (or designee) and includes the chiefs of the elements whose functions are integral to the USACE role in civil works project. The HQUSACE PRB will review the study only if it determines that it needs intensive management at that level or if recommended by South Pacific Division (SPD) PRB. The HQUSACE PRB will facilitate resolution of major study issues, concerns, or problems through Corps functional channels and make recommendations to the Director of Civil Works, SPD, and Los Angeles District (SPL) as part of intensive management. The HQUSACE PRB will meet bi-monthly.

The second PRB will be chaired by the SPD Commander (or designee) and include the chiefs of the elements whose functions are integral to the role of the Division in civil works projects. The SPD PRB will facilitate resolution or elevate to higher authority major issues raised during the study.

A third PRB will be held by the Los Angeles District and chaired by the District Commander (or designee). It will include the chiefs of the elements whose functions are integral to the role of the District in civil works projects. The District PRB will facilitate resolution or elevate to SPD major issues raised during the study. The sponsor may attend the District PRB meetings at his/her discretion.

4.2 EXECUTIVE COMMITTEE

The Executive Committee will include the District Engineer (or designee), and the Chief of the Planning Division. The sponsor will provide one representative along with one primary technical advisor. The District Engineer or his designee and his counterpart from City of Carpinteria will co-chair the committee. The Executive Committee will manage the overall study by (1) maintaining a working knowledge of the feasibility study progress and results, (2) assisting in resolving emerging policy issues, (3) ensuring that evolving study results and policies are consistent and coordinated, (4) directing the PDT, and (5) taking actions on the recommendations made by the PDT.

The Executive Committee will participate in Issue Resolution Conferences (IRCs). The committee is also responsible for resolving any disputes that may arise during the study. The committee will agree on the solutions and study direction, which may include termination. At least one IRC will be held prior to the public distribution of the draft feasibility report to ensure that all issues are resolved before the final report is submitted to higher authority. Additional IRCS will be held, as required, throughout the study to resolve any problems that may arise.

4.3 PROJECT DELIVERY TEAM (PDT)

The PDT will include representatives from the Corps, and the Local Sponsor. This team will ensure appropriate scope of the studies, guide in their accomplishment, and participate in selection of potential solutions. The team will be directly involved in establishing mutual roles and in focusing on the critical issues. Corps representatives will include the Corps study manager, project manager, technical manager from coastal engineering, geotechnical engineers, economics, environmental, and real estate, and the Local Sponsor's representatives. The team will recommend to the Executive Committee the tasks to be conducted and extent of planning and evaluation to be carried out in the feasibility phase. The team will also report to the committee on the results of studies and recommend alternative courses of action for project implementation.

PDT meetings will be held regularly throughout the feasibility phase. Meetings will be held at approximately 3-month intervals, but may be more frequent.

SECTION 5 - TECHNICAL REQUIREMENTS

The feasibility study work effort and management requirements are developed in accordance with the requirements of Federal laws, policies, and guidelines. In general, these requirements have been incorporated into a number of Corps regulations that establish procedures required for compliance. The scope of studies in terms of content and level of detail for the feasibility stage have been developed in recognition of the procedures and requirements contained in the following regulations and other documents:

ER 5-1-11 dated 1 March 1991	"Management" Department of the Army regulation for the overall management of civil works projects.
ER 200-2-2 dated 4 March 1988 33 CFR 230	"Procedures for Implementing NEPA" Department of Army regulation on environmental quality.
ER 200-2-3 dated 30 Oct 1996	"Environmental Compliance Policies" Department of Army regulation on environmental quality.
ER 405-1-12 (Ch. 12) dated 15 May 2000	"Real Estate Handbook - Local Cooperation" Department of the Army regulation establishing guidelines for real estate activities for local cooperation agreements.
ER 1105-2-100 dated 22 April 2000	"Planning Guidance Notebook" Department of the Army regulation on policy and guidance for the conduct of civil works planning studies.
ER 1110-2-1150 dated 31 Aug 1999	"Engineering and Design for Civil Works Projects" Describes engineering responsibilities, requirements, and procedures during the planning, design, construction, and operations phases of civil works projects and appropriate roles and responsibilities.
ER 1165-2-131 dated 15 April 1989	"Local Cooperation Agreement for New Starts" Department of the Army regulation for developing and processing local cooperation agreements.
OM 37-34-4 Dated 12 Jan 1996	"Procedures for Processing Project Cooperation Agreement"
ER 1110-2-1302 dated 31 March 1994	"Civil Works Cost Engineering"
ER 1110-1-1300 dated 26 March 1993	"Cost Engineering Policy and General Requirements"
EC 1110-2-5025 dated March 1983	"Dredging and Dredged Material Disposal"
EM 1110-2-2104, dated 30 June 1992	"Strength Design for Reinforced Concrete Hydraulic Structures", U.S. Army Corps of Engineers.
EM 1110-2-2502, dated 29 Sept. 1989	"Retaining and Flood Walls", U.S. Army Corps of Engineers.

SECTION 6 - STUDY PROGRAM

This section presents the study program for completing the Carpinteria Shoreline Feasibility Study. The study program was developed using a work breakdown structure to define study products, sub products, and associated tasks, level of effort and costs. Table 6-1 presents a general work breakdown structure for the Carpinteria Shoreline Feasibility Study. Automated network process was used in laying out the work effort by related activities and products to define the study schedule. The following presents descriptions of the study requirements, effort, cost, schedule and organization responsibilities for completing the Carpinteria Shoreline Feasibility Study.

6.1 WORK TASKS AND RESPONSIBILITIES

The Carpinteria Shoreline Feasibility Study will concentrate on the five (5) alternatives shown in Table 3-2 and will focus on formulating and optimizing the alternatives. The feasibility study will include the following study tasks: public involvement; environmental studies; study management; institutional studies; plan formulation; economic studies; harbor and coastal engineering and design studies; survey and mapping; cost estimation; fish and wildlife studies; geotechnical studies; cultural resource studies; real estate studies; report preparation; and technical review. At the beginning of the study, Engineering Service Requests (ESR's) will be issued by the Project Manager detailing specific study tasks, funding, schedules, and the form and detail of the expected product.

Appendix A presents the Gantt Chart laying out the Study Program including major feasibility study tasks and the responsibilities for accomplishing these tasks as well as schedule and cost. At the beginning of each task, the non-initiating agency, either Corps or Local Sponsor, may review any planned work or contract of the other for adequacy. At the completion of each task, the non-initiating agency may review and approve the results of the work before it is considered complete. Review and assessment of the adequacy of the work will be accomplished by the Study Management Team and its technical staff. The term "In-Kind" is defined as those tasks completed by the Local Sponsor in substitution of a cash contribution.

Table 6-1 Work Breakdown Structure

MANAGEMENT

Program Management

- Manage & Report Schedule, Costs, Budget FY 3
- Manage & Report Schedule, Costs, Budget FY 4
- Manage & Report Schedule, Costs, Budget FY 5
- Manage & Report Schedule, Costs, Budget FY 6
- Manage & Report Schedule, Costs, Budget FY 7

Project Management

- Manage project for FY3, FY4, FY5, FY6 & FY7

Study Management

- Prepare Study, Setup Accounts, Issue PRC's
- Develop Without Project Conditions
- Direct Development of Alternative Plans and Assessments
- Evaluate alternatives
- Direct Refinement of Plans
- Define Cost-Sharing Requirements First Cost and O&M
- Define Local Cooperation Requirements
- Prepare FRC Presentations
- SPD & Washington Review Draft Report
- Participate in Preparing MFR
- Participate in Preparing PGM
- Prepare Revisions per PGM Guidance

Program Development

- Program Development FY 3
- Program Development FY 4
- Program Development FY 5
- Program Development FY 6
- Program Development FY 7

PLAN FORMULATION

- Define Problems and Needs
- Define Planning Objectives and Evaluation Criteria
- Review Measures & Define Alternative Plans
- Evaluate plan tradeoffs, NED Plan, Eq. Plan and Local Preferred Plan
- Select Recommended Plans

COASTAL ENGINEERING STUDIES

- Task Initiation and Research
- Field Studies
- Baseline Coastal Processes
- Preliminary Design
- Recommended Plan Detail Design
- Risk and Uncertainty Analysis
- Constructability Analysis
- Operation and Maintenance (O&M) Analysis
- Report Preparation and Processing/Review
- Project Management Plan Input

GEOTECHNICAL STUDIES

- Research Geological Literature
- Evaluate Sponsor Geotechnical Data
- Laboratory Testing and Analysis
- Travel (for sampling/drilling, etc.)
- Identify Stone and Concrete Sources
- Coordination with Planning & Sponsor
- Planning the Drilling Program (Scope of Work)
- Prepare Drilling Logs
- Support Preparation of Progress Review Appendix
- Prepare F4/F5 Draft Appendix
- F4/F5 ITR
- Geotechnical Branch Review
- Final Review and Preparation of Appendix

ECONOMIC STUDIES

- Socioeconomic Data Collection
- Conduct Structural Inventory
- Derive Depreciated Replacement Values for Residential Structures
- Infrastructure Survey
- Survey Historical, Emergency and Clean-up Damages
- Develop Damage Relationships and Damage Model
- Evaluating Existing Conditions
- Evaluate Recreational Resources
- Compute Benefits Alternatives
- Evaluate Recreational Resources W/ Project
- Compute Annual Cost
- Calculate Net Benefits & Benefit Ratio
- Meeting and Coordination
- Report Preparation/Documentation
- Writing Draft Reports
- Respond to Comments
- Update of Economic Data
- Writing Final Report

REAL ESTATE STUDIES

- Coordination
- Without Project Conditions
- F3 - Determine Land Requirements & Estates
- Provide Real Estate Cost Estimates
- F4 - Prepare Real Estate plan
- Rights of Entry
- Real Estate Map Preparation
- Peer Level Review and Technical Review
- F5 – Final Draft Report
- Real Estate Input to PMP

ENVIRONMENTAL STUDIES

- Coordination with Coastal Conservancy
- Conduct General Coordination, Field Work and Attend Meetings
- Air and Noise Baseline
- Land Use, Recreation and Aesthetic Baseline
- Coordinate with H&H on Elutrient Testing of Borrow Site
- Water Quality Studies including Results of Elutrient Testing
- Diving, Sampling and Analysis
- Endangered Species Baseline
- Environmental Baseline Conditions and Define Environmental Problems
- Environmental Impact Analysis Alternative Plans
- Cultural Resources Studies
- Impact Analysis
- Preliminary Draft EA
- USFWS Coordination Act Report (CAR)
- Prepare Draft 404 (b) (1)
- Draft Coastal Consistency Determination
- Draft AQ Conformance Determination
- Final Draft EA
- Finalize Draft EA for Public Review
- Response to PGM Comments
- Final USFWS Coordination Act Report (CAR)
- Obtain Coastal Commission Response

COST ENGINEERING STUDIES

- Without-Project Conditions
- Cost Estimate for 2 Alternatives
- Cost Estimate for Selected Alternative
- Final Draft Cost Engineering Appendix
- Final Cost Appendix

PUBLIC INVOLVEMENT

- Arrange Public Meetings, Mailing List and Other Meetings
- Prepare Public Notice and Other Letters

- Prepare F-2 (Public Workshop) & NOI for EA
- Present F-2
- Receive and summarize public comments
- Prepare letters, meeting arrangements for public review
- Prepare F-7 (Final Public Meeting)
- Present F-7
- Receive and response to public comments

DETAILED STUDY REPORT

- Technical Review by ITR (F3,F4 and F5)
- Prepare F-3 (Progress Review Conference) Report
- Present F-3
- Revisions to respond to SPD Comments
- Prepare PREL Conclusions and Recommendations
- Complete Preliminary Draft Report and Send to SPD for F4
- SPD Review PREL Draft Report
- Prepare F-4 (Alternatives Evaluation Conference)
- Present F-4
- AFB - Alternative Formulation Briefing
- Prepare F-5 (Draft Report)
- District Review & Corrections of Draft Report
- Submit Draft Report to SPD
- FRC - Feasibility Review Conference to SPD
- Prepare F-6 (Field Level Coordination)
- Present F-6
- Prepare Final Report
- District Review of Final Report
- Corrections to Final Report
- Print Final Report Documentation
- F-8 (Submit Final Report to SPD)
- SPD Review of Final Report
- Respond to Comments from SPD
- Prepare DE Notice
- F-9 (DE Public Notice) on Final Report
- Submit Final Report to WLRC
- WLRC Review and Assessment
- Prepare Prelim. Response to assessment & Prepare Field Meeting
- Field Meeting With WLRC
- Prepare Final Response to WLRC Assessment
- Prepare for Senior Reps Meeting
- Senior Reps Meeting
- HQ Prepare Chief's Report
- Chief's Report Signed
- Prepare ASA Report
- OMB Review of ASA Report
- ASA Sends Report to Congress

6.2 ENGINEERING STUDIES

6.2.1 General

The feasibility study-engineering appendix will contain sufficient engineering detail to enable the District to proceed directly to Construction Phase without additional engineering documentation. Sufficient engineering and design will be performed to evaluate technical alternatives (including the without project conditions), enable further refinement of the project features, prepare the baseline cost estimate, develop a design and construction schedule, and allow design on the selected plan to begin immediately following receipt of Feasibility Study funds. The objective is to allow the project to proceed through the Feasibility phase without the need for reformulation, and General Design Memorandum (GDM), or post-authorization changes. Engineering will also provide support to the Project Manager (PM) in developing revisions to recommended plan detail design and report.

6.2.2 Engineering Aspects

Based on engineering assessment of the five alternatives, it is expected that all five alternatives will stop the erosion of the shoreline. The benefits of protecting the structures from erosion is equal to the loss of the structure and land values in the without project conditions or \$459,100 (\$316,400 in loss land values and \$142,700 in loss structure values). The beach nourishment alternative was evaluated for technical performance on the basis of the estimated longevity of the nourishment and the storm wave and runoff attenuation characteristics.

During storm conditions, part of the proposed beach fills will temporarily erode, waves will break on the reduced profile and runoff will flood a portion of the fill berm. The remaining fill berms still form a buffer that protects the bluff base from direct wave exposures. Thus, shoreline damages would be mitigated.

Renourishment requirements were estimated for 2-year and 5-year periods. Artificial reef submerged breakwater (ARSB) afford the opportunity to stabilize beachfills and as a result provide for longer fill longevity. ARSB can effectively stabilize the segment of beach within the shadow of the structure's wave protection.

Shoreline effects associated with the alternative is estimated to be minimal because the influence will be localized and temporary. Consequently, this is considered to pose little impact to the natural littoral sediment processes.

The sand nourishment and the breakwaters features would provide 25-year level protection from wave damages. All alternatives are expected to provide 25-year level protection throughout the 50-year analysis. The damage assessment model estimated the annual damages for with project conditions to be \$41,100 compare to the without project conditions annual damages of \$10,800. The annual damages for the without project conditions are less than with project conditions, because the scenario for the without project conditions has the structures along the shoreline being destroyed by erosion in the year 2013. While the scenario for with project conditions has the structures surviving throughout the fifty-year analysis. The wave damages for the seawall is expected to be zero, since alternative 3 is expected to provide 100-year level protection. The reduction in annual damages for the seawall is \$10,800.

A summary of estimated average annual project costs is provided in Table 6-2.

Table 6-2

Average Annual Project Costs	
Alternative	Annual Cost
1a. Beach Nourishment with 2 yr cycle	\$1,049,900
1b. Beach Nourishment with 5 yr cycle	\$347,900
2a. ARSB with one segment	\$292,900
2b. ARSB with three segments	\$701,000
3. Seawall	\$307,600

6.2.3 Geotechnical Studies

The work shown in Table 1 will include reviewing existing geotechnical data and designing and executing a sampling program to determine the geotechnical and chemical characteristics in the study area and the borrow sites. These samples will be sent to a laboratory for physical and chemical analysis. This information will be used to determine dredgeability; the quality of dredge material and the disposal of dredge material in the downcoast beach areas. A report will be prepared which presents all the chemical and physical information obtained through these investigations.

It is assumed that the fill would be constructed using hopper dredge equipment importing material from the borrow area closest to the fill site. Identified offshore borrow areas are near Goleta, Santa Barbara's East Beach and Carpinteria near Rincon Creek. Sand would be pumped ashore from the dredge through a temporary mooring buoy using onboard pumps. Conventional earth moving equipment located onshore would grade the final fill berm profile. Because of the relatively close proximity of the borrow areas to some of the fill sites, hydraulic pipeline dredges could also be utilized to pump sand directly ashore from the source area. Alternatively, sand may be trucked to the area from inland borrow sources. However, other than the nominal volumes of sand that are potentially available from the regions flood control debris basins, no significant onshore borrow area has been identified at this time. Such deposits of beach compatible material may be identified during the feasibility phase study.

Table 1 Geotechnical Studies

Task Name	Start Date	Finish Date	Duration
GEOTECHNICAL STUDIES	28-Jul-03	21-Mar-05	431 days
Sponsor's Coordination and Support	28-Jul-03	21-Feb-05	411 days
Research Geologic Literature	28-Jul-03	1-Aug-03	5 days
Evaluate Sponsor Geotechnical Data	11-Aug-03	11-Aug-03	1 day
Laboratory Testing and analysis	18-Aug-03	4-Sep-03	14 days
Travel (for sampling/drilling, etc.)	8-Sep-03	15-Sep-03	6 days
Identify Stone and Concrete Sources	22-Sep-03	22-Sep-03	1 day
Coordination with Planning and Sponsor	24-Sep-03	30-Sep-	5 days
Planning the Drilling Program (Scope of Work)	28-Jun-04	9-Jul-04	10 days
Prepare Drilling Logs	26-Jul-04	30-Jul-04	5 days
Support Preparation of Progress Review Appendix	16-Aug-04	16-Aug-04	1 day

Prepare F4/F5 draft appendix	28-Feb-05	11-Mar-05	10 days
F4/F5 ITR	14-Mar-05	15-Mar-05	2 days
Geotechnical Branch Review	16-Mar-05	17-Mar-05	2 days
Final Review and Preparation of Appendix	18-Mar-05	21-Mar-05	2 days

6.2.4 Basis for Design

Preliminary design of coastal flood protection should be based on selections of stillwater level in conjunction with storm waves of increasing severity. The design water level was +7-7/8ft MLLW, which corresponds to an annual maximum astronomical tides of +6-7/8ft MLLW and a 1(one) foot added height of combined storm surge and wave setup components. The relatively shallow storm erosion profiles limited by bedrock or cobble layers will result in depth-limited wave heights at the structures in question. During the assumed storm tide conditions, available water depths range from 18ft to 23ft near the offshore breakwater, 6-7/8ft to 7-7/8ft at the revetment and seawall, 15-3/4ft to 18ft at the groin head. This implies that the maximum wave height that will break on or near the structure will be approximately 8-1/4ft to 19-5/8ft.

6.2.5 Coastal Engineering and Design Analysis

The purpose of the coastal engineering studies is to define the coastal processes in the study area as they relate to the potential for economic loss, provide the technical evaluation of the formulated plans and account for risk and uncertainty in engineering calculations. The work shown in Table 2, will include preliminary design, final conceptual design, and cost estimate of the alternative plans. Field studies will be conducted.

The work includes design and cost estimates for the beach nourishment, shoreline stabilization and protection measures, environmental mitigation and protection features. Field studies will be conducted to perform hydrographic and topographic surveys. The survey data are used to develop base maps and to determine the present shoreline position. Also, a detailed analysis of the prevailing coastal processes will be performed to determine the wave climate, develop the sediment budget, and model shoreline changes.

An engineering analysis will be conducted to obtain the "best estimate" of the NED plan. The NED is determined by the plan that provides the largest amount of net benefits. Also, a risk and uncertainty analysis will be performed to develop a statistical description about the answers.

This analysis will consist of evaluation of (a) coastal storm characteristics and frequency; (b) shoreline and structure response to storm events; and (c) long term shoreline/profile changes.

The littoral processes will be analyzed to develop the sediment budget. Available existing bathymetric survey off the coast will be researched and reviewed to determine if new bathymetric survey is necessary. New bathymetric survey will be done after reviewing the available data and determined that new survey is needed.

Preliminary construction procedures, construction sequencing, operation and maintenance analysis, and water control and dust/noise suppression plans will be developed. Construction hauling routes, access and staging areas will be identified. Constructibility reviews with USACE construction elements will be conducted.

Work will include preparation of materials, including text and plates, for inclusion in the appendix summarizing the coastal processes and design studies, assisting in plan formulation, in-house report review, response to comments, support to the Study Manager and others during the study phase, and preparation of work and cost estimates for the Detailed Study Report.

Activities for the design work consist of the following:

Task Initiation and Research

1. Site Visit
2. Estimate and workload
3. Review existing data
4. Coordination and study team meeting attendance

Field Studies

1. Perform hydrographic, sub-bottom and side scan survey
2. Perform beach profiles
3. Ortho-photos and 0.5 ft photogrammetry
4. Compile survey data and develop CADD and GIS mapping

Baseline Coastal Processes

1. Review existing studies
2. Determine wave climate
 - a. Compile deepwater wave statistics for normal and extreme conditions
 - b. Transform deepwater waves to the local site with refraction, shoaling, and island sheltering analysis
 - c. Perform extreme wave analysis of the local site
 - d. Estimate longshore energy flux factors
3. Perform water level studies that include tide, ENSO, wind and wave setup
4. Analyze littoral process
 - a. Compile historic shoreline data
 - b. Estimate historic volume changes
 - c. Estimate longshore transport potential
 - d. Estimate sediment sources and sinks
 - e. Develop sediment budget
 - f. Project future shoreline condition
5. Determine storm damages due to wave runoff, inundation, and erosion.
6. Setup up shoreline change model – GENESIS, calibrate and verify model.

Preliminary Design

1. Coordinate with elements of Planning and Engineering Divisions
2. Site investigations
3. Preliminary designs
 - a. Design of alternatives
 - b. Determine quantities
 - c. Draft preliminary designs
 - d. Coordinate cost estimate
4. Evaluate preliminary design
 - a. Effects on shoreline
 - b. Effectiveness under storm conditions
5. Preliminary design review changes
 - a. Revise design of alternatives
 - b. Determine quantities
 - c. Draft designs
 - d. Coordinate cost estimate
6. Shoreline modeling using GENESIS

Recommended Plan Detail Design

1. Coordinate with elements of Planning and Engineering divisions
2. Site investigation/field check

- a. Determine quantities
- b. Draft final design plates
- c. Coordinate cost estimate
- d. Prepare construction schedule

Risk and Uncertainty Analysis

1. Coordinate with elements of Planning and Engineering Divisions
2. Coastal storm characteristics and frequency
 - a. Return frequency of significant wave heights and periods
 - b. Tides
 - c. Surge (ENSO, wind and wave setup)
 - d. Duration
 - e. Occurrences per year
3. Shoreline and structure response to storm events
 - a. Storm retreat and post storm recovery, maximum wave runup and inundation levels
 - b. Performance of existing protective works (reliability analysis)
4. Long term shoreline/profile changes
 - a. Sediment budget sensitivity analysis
 - b. GENESIS modeling
 - c. Verification of results
 - d. Estimate confidence in prediction

Constructability Analysis

1. Develop preliminary procedures and sequencing
2. Identify hauling routes, access and staging areas
3. Develop water control and dust/noise suppression

Operations and Maintenance (O&M) Analysis

1. Identify O&M requirements
2. Coordinate O&M cost estimate

Report Preparation and Processing/Review

1. Prepare coastal processes appendix
2. Prepare design appendix and plates
3. Coordinate with study manager and other technical elements
4. Respond to review comments
5. Review feasibility report/appendix
6. Prepare/submit monthly status report (to include any issues, tasks or percent task completion, and labor charges for the month.

PMP Input

1. Prepare scope
2. Prepare cost estimate

Table 2 Coastal Engineering Studies

Task Name	Start Date	Finish Date	Duration
COASTAL ENGINEERING STUDIES	28-Jul-03	12-Aug-05	535 days
Task Initiation and Research	28-Jul-03	8-Aug-03	10 days
Perform Beach Profiles	11-Aug-03	19-Sep-03	30 days
Ortho-photos and 0.5ft Photogrametry	11-Aug-03	5-Sep-03	20 days
Field Studies	22-Sep-03	12-Dec-03	60 days

Baseline Coastal Processes	15-Dec-03	5-Mar-04	60 days
Preliminary Design	8-Mar-04	30-Apr-04	40 days
Recommended Plan Detail Design	3-May-04	11-Jun-04	30 days
Risk and Uncertainty Analysis	14-Jun-04	23-Jul-04	30 days
Constructability Analysis	26-Jul-04	6-Aug-04	10 days
Operation and Maintenance Analysis	9-Aug-04	20-Aug-04	10 days
Report Preparation and Processing/Review	23-May-05	1-Jul-05	30 days
Project Management Plan Input	4-Jul-05	12-Aug-05	30 days

6.3 ECONOMIC STUDIES

The work shown in Table 4 will include determining without project conditions that may benefit from the mitigation alternative and comparing them to with project costs over the project life.

By comparing with and without project costs over the project life for alternatives, the economic benefits of implementing each alternative may be determined. This information can be used to compare to the cost of each alternative plan to determine the economic justification of each alternative, and select the NED plan.

Risk and uncertainty analysis will be conducted to evaluate the sensitivity of project justification and optimization to certain variables. An economic appendix will be provided for inclusion in the technical documentation for the feasibility study and will include the details on the derivation of benefits for each alternative.

Table 4 Economic Studies

Task Name	Start Date	Finish Date	Duration
Supervision and Support	21-Jul-03	24-May-05	482 days
Socioeconomic Data Collection	21-Jul-03	25-Jul-03	5 days
In-kind-Services (Socioeconomic Data Collection)	28-Jul-03	15-Aug-03	15 days
Conduct Structural Inventory	18-Aug-03	20-Aug-03	3 days
Derive Depreciated Replacement Values for Residential Structures	21-Aug-03	25-Aug-03	3 days
In-kind-Services (Infrastructure Survey)	26-Aug-03	15-Sep-03	15 days
In-Kind-Services (Survey Historical, Emergency & Clean-Up)	16-Sep-03	6-Oct-03	15 days
Develop Damage Relationships and Damage Model	7-Oct-03	20-Oct-03	10 days
Evaluating Existing Conditions (W/O Damages)	15-Dec-03	2-Jan-04	15 days
Evaluate Recreational Resources	5-Jan-04	23-Jan-04	15 days
Compute Benefits Alternatives	26-Jan-04	13-Feb-04	15 days
Evaluate Recreational Resources With Project	16-Feb-04	20-Feb-04	5 days
Compute Annual Cost	23-Feb-04	5-Mar-04	10 days
Calculate Net Benefits and Benefit Ratio	5-Apr-04	9-Apr-04	5 days
Meeting and Coordination	26-Apr-04	30-Apr-04	5 days
Report Preparation/Documentation	17-May-04	19-May-04	3 days
Writing Draft Reports	23-Aug-04	27-Aug-04	5 days
Respond to Comments	2-May-05	13-May-05	10 days
Update of Economic Data	16-May-05	20-May-05	5 days
Writing Final Report	23-May-05	25-May-05	3 days

6.3.1 Social and Economic Aspects

Storm and Erosion Damages

Based on the without project conditions, the shoreline is expected to lose 6 feet per year due to ocean currents along the shoreline. According to the Santa Barbara and Ventura Counties Reconnaissance Report, April 1997, the destruction of the structures will occur when the shoreline reaches the front of the structures. The current updated value of the structures along the shoreline is equal to \$3,127,600. It is expected that the destruction of the structures will occur in the year of 2013. Also, it is expected that the homeowners will be responsible for demolition costs of \$7,500 per structure. The expected annual damages due to long-term erosion of shoreline are expected to be \$142,700.

The erosion of the shoreline will cause economic loss of the land values along the shoreline, since parcels will be too small to build a replacement structure. The price of the land values estimated to be \$88 per square feet. The land value that is susceptible to loss from erosion is estimated to be \$7,149,400. The annual loss is \$316,400, since the loss of the land will occur in the year 2013.

The structures are expected to have wave damages between the years of 2008 and 2012. The wave damage methodology was detailed in the Santa Barbara and Ventura Counties Shoreline Reconnaissance Report. The City of Carpinteria constructs a berm each year that has elevation of 20.5 feet during each winter season. Based on the methodology in the report the berm is expected to provide a 25-year level protection.

Without project recreation

There are two beaches located in the City of Carpinteria that provide significant recreational value to tourist that visit Carpinteria and to the local residents. The beach that is owned by City of Carpinteria is located in front of structures that are vulnerable by the long-term erosion of the shoreline and wave damages from large storm events. Also, the City Beach is expected to have annual attendance of 250,000 users per year. The state of California owns the other beach, which includes a campground for RVs and campers. The evaluation of recreational values was based on the Santa Barbara and Ventura Counties Shoreline Reconnaissance Report. The report used unit-day value for evaluating the recreational value for the two beaches. It is expected that users will transfer from the city beach to the state beach when the area for each user is less 75 square per person. This methodology is used in the Carlsbad Reconnaissance Report (January, 1994). After the year 2012, all the users at the city beach will transfer to the state beach. Also, the unit day value was updated to the 2002 unit-day value of \$4.57.

The erosion of the State Beach shoreline is expected to be three feet per year. It is expected that users willingness to pay will decrease when the beach size will cause the square feet per users to be less than 75 feet. The decrease in the unit day value was based on the proportional decrease in amount of the square feet per users. An updated analysis of the reconnaissance report estimated that the annual recreational value for users of the City Beach to be \$683,200.

The amount of annual damages calculated for the without project damages can be greatly reduced if the City of Carpinteria builds a seawall in year 2012. The seawall will have an annual cost of \$231,200, compared to erosion damages of \$459,100. However, the costs of seawall do not include the cost of mitigation that will be needed offset the environmental costs of the seawall. Table 6-2 provides annual damages to the structures.

Table 6-2

Type of Damages	Damages
Erosion Damages- Land Loss	\$316,400
Erosion Damages- Structures	\$142,700
Wave Damages	\$10,800

With project condition

The alternatives were evaluated for their effectiveness in maintaining the recreational value in the proposed areas. The national interest for beach recreation is limited to maintaining public access to beaches and ensuring that capacity of the beach area does not cause a decline in the recreational value. Refer to Table-1 for total annual benefits and first cost for each alternatives.

The alternatives of sand nourishment (1a. and 1b.) and the breakwaters (2a. and 2b.), will enhance the recreation activities at the City beach. These alternatives will ensure that size of the beach will maintain the full value of UDV (Unit Day Value) for the users of the beach. Since beach is expected to maintain the UDV of \$4.57, it is expected the beach will have an annual value of \$1,142,500. The annual benefit for all alternatives will be \$459,300 the increase value over the without project value of \$683,200. However, the guidance in ER 1105-2-100 stipulates that recreation benefits for a project cannot be more than 50% of the storm damage reduction benefits. Based on the guidance in ER 1105-2-100, the annual benefits will be \$428,800.

The seawall alternative is expected to have the same recreation value as the without project conditions. Since the seawall does not protect the City beach from erosion the recreational activities at the beach will be affected. Benefits are included in Table 6-3, which summarizes annual damages and recreational value.

Table 6-3

Without project & Alternatives	Land Loss & Structures	Wave Damages	Recreation Value
Without Project	\$459,100	\$10,800	\$683,200
Alternative 1a.	\$0	\$41,100	\$1,142,500
Alternative 1b.	\$0	\$41,100	\$1,142,500
Alternative 2a.	\$0	\$41,100	\$1,142,500
Alternative 2b.	\$0	\$41,100	\$1,142,500
Alternative 3	\$0	\$0	\$1,142,500

6.3.2 Economic Criteria

The general economic criteria that apply in formulating and comparing alternatives are summarized as follows:

1. Tangible project benefits must equal or exceed economic costs. The benefit-to-cost (B/C) ratio is a measure of this criterion. The B/C Ratio must exceed 1-to-1 to achieve economic justification.
2. The scale of development should consider maximization of net benefits (benefits minus costs)
3. The objectives cannot be attained by a more economical solution.

The Principles and Guidelines for Federal Water Resources Planning require that, during plan formulation, a plan be identified that produces the greatest contribution to the National

Economic Development (NED). This plan, called the NED plan, is defined as the plan providing the greatest net benefits as determined by subtracting annual costs from annual benefits. The Corps of Engineers policy requires recommendation of the NED plan unless there is adequate justification to do otherwise.

6.3.3 Coastal Engineering Input

Risk and uncertainty concepts will be incorporated into the coastal engineering evaluation to quantify the degree of uncertainty and risk associated with the performance and projection of physical effects under the 'Without Project' scenario. This evaluation, when incorporated into the complimentary analysis of economic risk and uncertainty, will be used in a risk-based project formulation process which will quantify the expectation and provide a probability of meeting those expectations associated with an action.

There are many factors contributing to the physical and economic effect of coastal storm damages. For practical purposes, the focus of the coastal engineering risk and uncertainty analysis will be the coastal storm characteristics, shoreline and structure response to coastal storms, and long term shoreline and profile changes. All of these factors interact in a complex but not necessarily independent manner to produce a physical effect on shoreline improvements such as runup and flooding, wave impact on structures, or erosion and undermining of structures. The most critical factors affecting these physical effects will be subject to risk and uncertainty analysis. The following outlines the general approach which is proposed, however, adjustments to the procedures may be warranted during the course of the evaluation.

Coastal storm events will be characterized by height, period, tide level, storm surge/wave setup, and return period parameters. Estimates of confidence limits will be made using available established programs such as Micro-Computer Aided Cost Estimating (MCACES) which will provide confidence limits based on the length and scatter of the historic record, or through Monte-Carlo simulation of synthetically combining occurrence of possible storm parameters over many project life simulations. The tangible result for input into the economic simulation will be the probability of the maximum run-up elevation (or 2 percent runup) at representative shoreline locations; the probability of significant wave height at specific locations where damage is directly related to the wave height at the toe of the existing revetment structures; and the probability of broken wave forces on representative structural elements, such as houses subject to direct wave attack.

A statistical description of the number, queuing time (i.e. time between storms), and conditional probability of magnitude normalized by the seasonal maxima will be estimated from available measured nearshore wave data at Carpinteria.

Storm damages are heavily dependent on the beach response during the storm since the nearshore profile controls wave heights, runup levels etc. For convenience, the shoreline response can be considered as a short term process on a time scale of a storm duration (about 12 hours) superposed on several longer term processes of seasonal changes and shoreline evolution over multiple years due to the prevailing sediment budget. The short term shoreline response is primarily a cross-shore phenomenon on plane linear beaches. It is proposed to utilize SBEACH (a numerical model for simulating storm-induced beach change) with varying wave and water level conditions to estimate a probability distribution of short term shoreline response. Few measured profile data, if any, are available at the peak of a storm event in the project area, however, the available winter profiles and the statistical variation in depth along those profiles will be reviewed in concert with the SBEACH results to determine whether any adjustments

based on professional judgment should be applied. These adjustments may be necessary due to the existence of shallow bedrock in the nearshore which would limit the depth of erosion, and to account for losses in beach width due to longshore process in the study area where the plane linear beach assumption is violated. The reliability of the with project beachfill to provide protection can also be based on the SBEACH simulation, if validation with observed data are reasonable.

Predictions of long-term shoreline changes will be estimated utilizing the GENESIS (a generalized model for simulating shoreline change). This model accounts for longshore sediment transport driven by the incident wave climate and can account for shore structures such as breakwaters, groins and seawalls. The model is a 2-dimensional model and can not directly account for cross-shore sediment losses. These losses will be approximated by adjustment of the boundary conditions. Although the GENESIS model has serious shortcomings in modeling the physical processes controlling shoreline changes, it will model the dominant process and can be used to objectively compare the effects of shore structures under a common set of wave conditions. A sensitivity analysis of the shoreline effects predicted by varying the incident wave climate, sediment budget and transport parameters will be used to assess the uncertainty in predicting long-term shoreline change. This analysis is expected to provide data on the evolution of areas with year-round beach widths and "with-project" beachfills. It will not be applicable for deepening of the nearshore profile in areas where there is currently little or no winter beach widths fronting revetment structures. In these areas, the potential transport capacity and the distribution of transport rates from GENESIS can be used to estimate the rate of volume loss from the submerged profile.

Results of the sensitivity analysis will provide the mode and range of predicted shoreline response. The underlying probability distributions of the parameters which are varied in the sensitivity analysis, i.e. net annual longshore energy flux, will be used to estimate a probability distribution around the long term shoreline response.

6.3.4 Determination of Feasible Alternatives

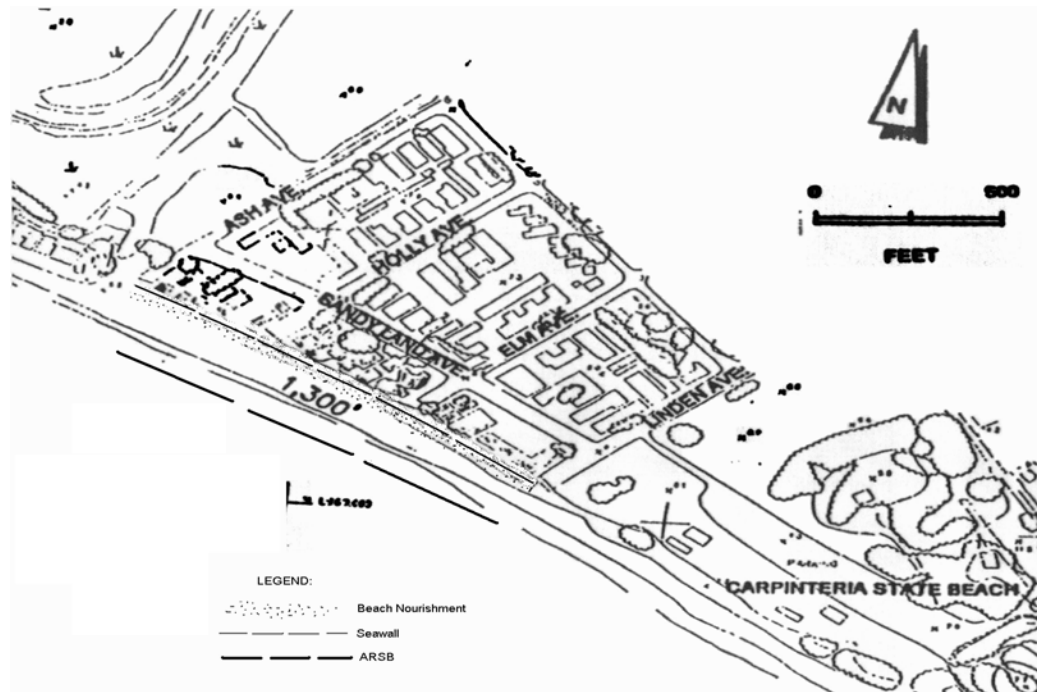
The plan formulation, review and evaluation processes considered a wide array of shoreline protection alternatives for reducing coastal flooding and storm damages within the study area. The economic analyses indicated that damages, benefits and project justification are sensitive to the extent of existing shoreline protection measures that have been implemented by private parties over the years. Even though the current seawalls and revetments provide in many cases only partial storm protection, the cost to improve the situation does not offset the incremental benefits as derived from the prescribed Federal analysis.

The economic guidelines for evaluating Federal participation in the development and implementation of storm damage protection projects require that the potential project has a benefit-to-cost ratio of greater than one, and that the annual project benefits are greater than the annual project costs. Of the five alternatives formulated as potential solutions to the problems in the Carpinteria shoreline area, four alternatives, 1b.) Beach Nourishment with five-year renourishment period; 2a.) ARSB with one segment and the 2b.) ARSB with three segments, and 3.) Seawall concepts, Figure 4, are economically justified. All alternatives are expected to provide 25-year level protection throughout the 50-year analysis. The damage assessment model estimated the annual damages estimated for with project conditions to be \$41,100 compare to the without project conditions of \$10,800. The annual damages for the without project conditions are less than with project conditions, because the scenario for the without project conditions has the structures along the shoreline being destroyed by erosion in the year 2013.

While the scenario for with project conditions has the structures surviving throughout the fifty-year analysis.

These alternatives have been identified as eligible to be carried forward for further investigation under the feasibility phase study.

Figure 4 Study Map



6.4 REAL ESTATE STUDIES

The work shown in Table 5 will be conducted by the Corps and the Local Sponsor. It will include preparation of preliminary real estate cost estimates for project right-of-way requirements, participation in pre-Project Cooperation Agreement activities, preparation of real estate plan for inclusion in the feasibility report, preparation of a gross appraisal in the code of accounts format, and preparation of scope of work outlining real estate input to the PMP.

The preparation of preliminary cost estimates includes the development of preliminary cost estimate(s) for total Real Estate Cost associated with proposed project scenarios. The Real Estate Cost Estimate(s) will include a value estimate of the projects' real property requirements, an estimate of any PL 91-646 relocation on payments required as a result of the project's real property acquisitions, an estimate of the local sponsor's administration cost to accomplish the project's real property requirements and an estimate of the corps' administration cost to assist and monitor the local sponsor's real property acquisition program.

Real Estate Plan (REP), an over all plan describing the minimum real estate requirements for the project requirements, will be prepared.

A gross appraisal report, which provides a detailed estimate of all Real Estate Cost associated with the acquisition of the proposed project's real property requirements, will be prepared. There is a possibility this will not be needed.

The preparation of baseline cost estimates real estate must be done. This activity

includes accounting for the project's total estimated Real Estate Cost in code of accounts format as required by ER 405-1-12. This estimate of total Real Estate Cost should include estimated costs for all Federal and local sponsor activities necessary for completion of the project. Real Estate will provide input to the PMP.

Table 5 Real Estate Studies

Task Name	Start Date	Finish Date	Duration
REAL ESTATE STUDIES	21-Aug-03	15-Oct-04	302 days
Coordination	21-Aug-03	29-Aug-03	7 days
Without Project Conditions	30-Sep-04	15-Oct-04	12 days
Determine Land Requirements and Estates	1-Sep-03	5-Sep-03	5 days
Provide Real Estate Cost Estimates	8-Sep-03	26-Sep-03	15 days
F4 - Prepare Real Estate Plan	29-Sep-03	24-Oct-03	20 days
Rights of Entry	27-Oct-03	21-Nov-03	20 days
Real Estate Map Preparation	23-Aug-04	17-Sep-04	20 days
Peer Level Review and Technical Review of Feasibility	20-Sep-04	21-Sep-04	2 days
F5 - Final Draft Report	22-Sep-04	24-Sep-04	3 days
Real Estate Input to Project Managers Plan	27-Sep-04	29-Sep-04	3 days

6.5 ENVIRONMENTAL STUDIES

The work shown in Table 6 will be performed in accordance with Corps of Engineers guidelines as contained in ER 1105-2-100 and requirements for compliance with NEPA. At the conclusion of these studies, environmental documents will be prepared to respond to NEPA and other Federal laws and policies.

6.5.1 Environmental Criteria

The process in evaluating environmental considerations to formulate and compare alternatives is as follows:

1. Alternatives will be evaluated for their potential environmental impact, either beneficial or adverse. The relationship between short-term uses and long-term productivity of impacted resources will be determined. Irreversible and irretrievable commitments of resources will be explicitly identified.

2. Efforts will be made to avoid detrimental environmental effects; when adverse effects are unavoidable, feasible mitigating features will be included wherever justified.

6.5.2 Environmental Aspects

The environmental evaluation of alternatives involves determining the impacts of an alternative, and providing mitigation for significant negative impacts, or damages to the project site. In a Feasibility Phase Study, the four justified alternatives for the Carpinteria damage area would be evaluated for potential land use impacts, and impacts on sediment transport rates.

The environmental component will include an Environmental Impact Statement (EIS) with Record of Decision (ROD) during the feasibility phase of the study.

6.5.3 Environmental Analysis

The environmental studies for this project will focus on the examination of possible opportunities for environmental restoration, including beach nourishment. A comprehensive

Environmental Impact Statement(EIS) to meet Federal NEPA requirements and Environmental Impact Report (EIR) to meet State CEQA requirements would be prepared. The EIS will be a joint document. Generally, the Corps will be responsible for satisfying Federal requirements, and the Local Sponsor will be responsible for assuring that State regulations are satisfied. The draft environmental document will be circulated to appropriate State and Federal agencies, interested organizations and individuals. Comments received on the draft will be addressed, and revisions will be made in accordance with Federal and State laws and regulations.

Although not anticipated, mitigation features for fish and wildlife and other affected resources will be formulated and monitoring plan developed to record the success of the mitigation. Any land required for mitigation will be identified. Requirements of the Endangered Species Act and the California Endangered Species Act will be completed during the feasibility phase. A biological assessment and formal consultation with the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and California Department of Fish and Game (CDFG) opinions will be initiated if it is determined that State- and Federally-listed species will be affected by the alternatives.

A Section 404 (b) (1) evaluation of water quality impacts will be accomplished by the Corps and coordinated with State and Federal water quality agencies to ensure that adequate consideration has been given to water quality and to acquire water quality certification or exemption.

A Coastal Consistency Determination will be prepared to evaluate project consistency with the Coastal Zone Management Act and the California Coastal Act. This document will be submitted to the California Coastal Commission for their approval, during public review of the Draft EA.

The Corps will also prepare a scope of work and contract with the USFWS to prepare a Coordination Act Report. The Corps will supervise the contract. All steps in the coordination act process will be available for review by the non-Federal sponsor. Please note that cost estimate for the USFWS to complete the CAR is the Corps' estimate and some degree of concurrence will be needed from the Service before this sum is finalized.

6.5.4 Endangered Species

Although no State or Federally-listed threatened or endangered species or associated habitats are currently known to occur in the project area, a site assessment and coordination with the USFWS and the CDFG will need to be conducted to determine if any special status species have the potential to occur in the area of potential impacts .

6.5.5 Fish and Wildlife Coordination Act Report

This task includes studies by the USFWS in support of the environmental studies required by the U.S. Fish and Wildlife Coordination Act. The principal USFWS product is a Coordination Act Report (CAR). The report will present USFWS, in coordination with NMFS and CDFG opinions on impacts of alternatives on fish and wildlife resources and recommend types and amounts of mitigation for habitat losses and opportunities for environmental restoration. The Corps will coordinate with USFWS and supervise the interagency contract as part of its environmental impact studies task.

6.5.6 Water Quality

A Section 404(b)(1) Evaluation of water quality impacts will be developed and coordinated with State and Federal water quality agencies to ensure adequate consideration has been given to water quality and in order to acquire water quality certification or, if appropriate, an exemption. Dredged material will be mechanically and chemically tested prior to its disposal on the beach, the nearshore environment, or an approved offshore disposal site.

6.5.7 Hazardous Toxic Radioactive Waste (HTRW)/Contaminated Sediments Report

If problems with HTRW or contaminated sediments are identified in the geotechnical analysis, a response analysis will be initiated to identify and evaluate alternatives to respond to the problem. The first alternative will be avoidance of the problem area. Activities to address the problem could include sampling and analysis to identify contaminants and concentrations, delineation of site contamination, assessment of threat to human health and the environment, and estimate of cleanup or disposal cost.

6.5.8 Cultural Resources Report

This task will be done by the Corps. The cultural resources studies will determine the impacts of the alternative plans on historical, architectural, and archeological resources. All studies will be conducted in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, 36 CFR 800 "Protection of Properties", and Corps Engineering Regulation 1105-2-100.

In consultation with the State Historic Preservation Office (SHPO), the Corps will conduct sufficient archival and field surveys to identify cultural sites within the study's Area of Potential Effect (APE) and will evaluate the eligibility of all cultural sites for the National Register of Historic Places (NRHP). If this research is insufficient to evaluate all resources for the NRHP, additional funding would be required in a later phase to conduct subsurface test excavations. A detailed report will be prepared which will describe all cultural resources within the APE and assess the impacts of each project alternative on these resources for inclusion in the environmental section of the appendix. The report will also describe the range of additional future preservation or mitigation efforts and the associated costs of these studies.

If project alternatives are determined to have an effect on sites eligible for the National Register, the Corps will proceed with further consultation with the SHPO and will afford the Advisory Council on Historic Preservation (ACHP) and other interested parties an opportunity to comment. If necessary, the Corps may enter into a Memorandum of Agreement with the SHPO, ACHP and Local sponsor to stipulate ways to avoid or reduce the effects of project alternatives on cultural resources. Preservation or mitigation of cultural resources will be considered in more detail for the plan recommended for construction in any advanced planning for the project.

Table 6 Environmental Studies

Task Name	Start Date	Finish Date	Duration
Coordination with Coastal Conservancy	28-Jul-03	4-Nov-05	595 days
Conduct General Coordination / Field Work / Attend Meeting	28-Jul-03	8-Aug-03	10 days
Public Meetings Facilitate & Conduct General Coordination, Fieldwork	11-Aug-03	29-Aug-03	15 days
Air and Noise Baseline (including SIP CD)	1-Sep-03	10-Oct-03	30 days
Land Use, Recreation and Aesthetic Baseline	13-Oct-03	24-Oct-03	10 days
Statistics, Land Use, Economics, Traffic, Noise	27-Oct-03	7-Nov-03	10 days

Coordinate with H&H on Elutrient Testing of Borrow Site	10-Nov-03	19-Dec-03	30 days
Water Quality Studies including Results of Elutrient Testing	22-Dec-03	26-Dec-03	5 days
Diving, Sampling and Analysis	29-Dec-03	9-Jan-04	10 days
GIS	12-Jan-04	30-Jan-04	15 days
Endangered Species Baseline	2-Feb-04	12-Mar-04	30 days
Environmental Baseline Conditions , Define Environmental Problems	15-Mar-04	23-Apr-04	30 days
Environmental Impact Analysis Alternative Plans	26-Apr-04	7-May-04	10 days
Website	10-May-04	9-Jul-04	45 days
Cultural Resources Studies	12-Jul-04	30-Jul-04	15 days
CEQA Compliance(NOI,NOP and Prep,etc.)	2-Aug-04	20-Aug-04	15 days
Impact Analysis	23-Aug-04	17-Sep-04	20 days
Preliminary Draft EA	20-Sep-04	8-Oct-04	15 days
Mailings (Print and Publish Draft and Final EA)	11-Oct-04	31-Dec-04	60 days
USFWS Coordination Act Report (CAR)	3-Jan-05	14-Jan-05	10 days
Prepare Draft 404 (b) (1)	17-Jan-05	28-Jan-05	10 days
Draft Coastal Consistency Determination	31-Jan-05	11-Feb-05	10 days

6.6 COST ENGINEERING STUDIES

The work shown in Table 7 will be accomplished by the Corps. Detailed first and annual baseline costs including operation and maintenance, will be developed in the MCACES format. The estimates will be prepared in accordance with ER 1110-2-1302 "Civil Works Construction Cost Estimating". A detailed basis of estimate and sensitivity analysis will be developed. All estimates shall be prepared as both first-costs (existing prices) and full-funded costs.

6.6.1 Costs

Costs are based on 2003 price levels and include costs as required for Pre-construction Engineering and Design (PED), and construction contingencies of 25%. Annual costs are based on 5.875% interest rate and an economic period of 50 years. Cost information is included in Appendix A

Most of the beaches within the study area are publicly owned, and the properties behind the beaches are privately owned.

Work will include preparation of materials, including MCACES estimate, cost engineering appendix, response to independent technical reviewer. Activities for the cost engineering work consist of the following:

Without-Project conditions

1. Meetings, conferences, coordination

Cost Estimate for 2 Alternatives

1. Research/gathering information
2. Site Visit – travel & per diem
3. Quantities evaluation
4. MCACES Estimates for alternatives
5. Meetings, conferences coordination and filing

Cost Estimate for Selected Alternative

1. Refine MCACES estimate for Recommended Alternative
2. Research/gathering information
3. Quantities evaluation
4. Meetings, conferences, coordination
5. Draft cost engineering appendix
6. Construction schedule

Final Draft Cost Engineering Appendix

1. Final draft engineering appendix/documents
2. Independent technical review(ITR), address comments

Final Draft Report

1. Meeting, conferences and coordination
2. Address comments and responses

Table 7 Cost Engineering

Task Name	Start Date	Finish Date	Duration
Sponsor's Coordination and Support	1-Dec-03	15-Jun-04	142 days
Without-Project Conditions	1-Dec-03	15-Jun-04	142 days
Cost Estimates for 2 Alternatives	2-Dec-03	4-Dec-03	3 days
Cost Estimate for Selected Alternatives	3-May-04	18-May-04	12 days
Final Draft Cost Engineering Appendix	19-May-04	7-Jun-04	14 days
Final Draft Report	8-Jun-04	9-Jun-04	2 days

6.7 PUBLIC INVOLVEMENT DOCUMENTS

The responsibility for this task shown in Table 8, will be shared between the Corps and the Local Sponsor, with the Local Sponsor performing most of the work. This task primarily consists of coordinating the study scope and results with the public; conducting public meetings and workshops; and responding to public inquiries. Also included is preparation of a public involvement plan upon initiation of the feasibility study. This plan will guide activities throughout the study.

The Corps will provide the Notice of Initiation of the feasibility study, provide public information summaries toward the end of the study, assist the Local Sponsor with local coordination, prepare and conduct the final public meeting, and provide necessary local, State and Federal coordination for the study.

The Local Sponsor will be responsible for arranging and hosting public workshop and outreach sessions, preparing follow-up documentation and maintaining mailing lists.

Table 8 Public Involvement Studies

Task Name	Start Date	Finish Date	Duration
Sponsor's Coordination and Support	21-Jul-03	26-May-06	745 days
Arrange Public Meetings, Mailing List and Other	21-Jul-03	26-May-06	745 days
Prepare Public Notice and Other Letters	21-Jul-03	29-Aug-03	30 days

Prepare F-2 (Public Workshop) & NOI for EIS	1-Sep-03	19-Sep-03	15 days
Present F-2	22-Sep-03	10-Oct-03	15 days
Receive and summarize public comments	13-Oct-03	17-Oct-03	5 days
Prepare letters, meeting arrangements for public review	20-Oct-03	28-Nov-03	30 days
Prepare F-7(Final Public Meeting)	20-Feb-06	10-Mar-06	15 days
Present F-7	13-Mar-06	31-Mar-06	15 days
Receive and response to public comments	1-May-06	5-May-06	5 days

6.8 PLAN FORMULATION

6.8.1 Planning Process

The objective of this planning process is to guide planning for the conservation, development, and management of water and related land resources. This planning process results in information necessary to make effective choices regarding resource management under existing and projected land use, and economic and environmental conditions in the study area.

6.8.2 Scope and Task

The work shown in Table 9 will be primarily a Federal responsibility, with input from the Local Sponsor. Plan formulation will be in accordance with ER 1105-2-100, Water Resources Council Principles and Guidelines, NEPA, and other pertinent engineering, environmental, and economic guidance and regulations.

Plan formulation will identify the National Economic Development (NED) Plan and corresponding level of protection. The report will identify and evaluate the locally preferred plan, if different from the NED plan, and a higher level of protection plan if it is determine that there is an overriding reason to recommend one which offers a greater level of protection. Plan formulation also includes reviewing and refining the plans selected for study during the feasibility phase and other plans developed during the course of study, and developing required plans such as the “no action” plan and various non-structural plans. this task includes identifying the NED plan, considering any environmental impact and the views of the public, and formulation mitigation measures. The costs and benefits associate with each plan will be determined, and tradeoffs required to select the recommended plan for implementation will be identified. Plan formulation includes application of engineering, economic, environmental, and other criteria to the specific problems, needs, and constraints of the study area to develop and analyze various methods, measures, and plans and their contributions to, and effectiveness in addressing the specific problems. It is an iterative and constant review process that requires team participation and constant review, reformulation, and public support. Critical to the process of plan formulation will be the development of the without-project conditions as a basis for comparison and evaluation of alternatives, and the recommendation of any key project features and/or related mitigation requirements. Plan formulation will also include an evaluation of advance engineering and construction plans for applicability to Section 104 credit.

The annual and periodic activities and responsibilities for operating and maintaining (O&M) the completed project will be described and closely coordinated with other requirements (e.g. cost estimates and environmental monitoring). The general magnitude of these activities will be described for all alternatives in detail; however, more detail will be provided for the alternative(s) recommended for implementation. All requirements of 33 CFR 208 and other

Federal regulations specifying operation and maintenance requirements will be clearly described so that the Local Sponsor's future responsibilities will be known.

Table 9 Plan Formulation Studies

Task Name	Start Date	Finish Date	Duration
Sponsor's Coordination and Support	8-Sep-03	23-Apr-04	165 days
Define Problems and Needs	8-Sep-03	26-Sep-03	15 days
Define Planning Objectives and evaluation criteria	6-Oct-03	31-Oct-03	20 days
Review measures and define alternative plans	1-Dec-03	26-Dec-03	20 days
Evaluate plan tradeoffs, NED Plan, Eq. Plan, Local	29-Dec-03	6-Feb-04	30 days
Select Recommended Plans	12-Apr-04	23-Apr-04	10 days

6.9 DETAILED STUDY REPORT

Detailed Study Report (DSR) in Table 10 gives a summary of the report preparation tasks, schedule, and cost. The DSR also include the documentation of the following tasks.

6.9.1 Preliminary Reports

Documentation of study findings and results will be continuous by each organization as work proceeds. The work effort is associated with preparing and producing preliminary drafts, a final draft, and the final report on the study. The final report will include a Main Report with the EA document and appendices. Preliminary in-progress review reports will be prepared for two checkpoint meetings with the Independent Technical Review (ITR) Team, South Pacific Division (SPD) and Headquarters (HQUSACE): the F3 Report and the F4 Report. The F3 Report will provide description of study area conditions, problems and needs, the established planning objectives and preliminary alternatives and very preliminary estimates of costs, benefits, and potential significant environmental impacts to identify which alternatives warrant further development during the study. The F4 Report will document full alternative formulation and identification of the NED plan and the tentatively selected plan. Costs and benefits and environmental impacts will be discussed in the F4 Report as well as proposed Federal and non-Federal implementation requirements. The F4 Report will provide the basis for the Alternative Formulation Briefing (AFB) with SPD and HQUSACE, which will decide and document in an AFB Project Guidance Memorandum (PGM), what actions are needed to allow for completion of a draft report for public review.

6.9.2 Draft Report Documentation

The work will include addressing the required actions identified in the AFB PGM in finalizing the draft report. The draft report will be reproduced and sent to SPD, HQUSACE, and Office of the Assistant Secretary of the Army for Civil Works as a basis for a Feasibility Review Conference (FRC), which will address any final issues or questions regarding the study recommendations and completing the final report. A FRC PGM will be completed by HQUSACE which will identify the required actions needed to complete the final feasibility report. At the same time the Draft Report is sent to higher Corps levels, the draft report and draft EA will be sent out for public review by interested Federal, State, and local agencies, as well as other public and private interests.

6.9.3 Final Report Documentation

This work will include all tasks necessary to produce and distribute the Detailed Study Report (DSR) and supporting documents. This includes addressing all required actions as contained in the FRC PGM, and comments received from public review of the draft feasibility report. Tasks also include all work items necessary to support the review process from review of the final draft feasibility report by South Pacific Division and Headquarters, USACE through the forwarding of the final report by the Assistant Secretary of the Army for Civil Works (ASA-CW) to the Office of Management and the Budget (OMB) and eventually to Congress. These tasks include providing copies of the report for State and Agency Review, preparing a ROD on the EA, answering comments, attending review meetings, and revising the report as necessary.

All report completion actions includes assembling pertinent data and writing, editing, typing, drafting, revising, reproducing, and distributing the draft feasibility report, EA, and related technical appendices.

Table 10 Detailed Study Report

Task Name	Start Date	Finish Date	Duration
Detailed Study Report	12-Apr-04	31-May-07	820 days
Sponsor's Coordination and Support	12-Apr-04	31-May-07	820 days
Technical Review by ITR (F3,F4 and F5)	5-Jul-04	11-Mar-05	180 days
In-Kind-Services Technical Review (F3,F4 and F5)	14-Mar-05	18-Nov-05	180 days
Prepare F-3 (Progress Review Conference) Report	5-Jul-04	13-Aug-04	30 days
Present F-3	6-Sep-04	10-Sep-04	5 days
Revisions to respond to SPD Comments	22-Sep-04	12-Oct-04	15 days
Prepare PREL Conclusions and Recommendations	25-Oct-04	5-Nov-04	10 days
Complete Preliminary Draft Report and Send to SPD for F4	3-Jan-05	21-Jan-05	15 days
SPD Review PREL Draft Report	24-Jan-05	11-Feb-05	15 days
Prepare F-4 (Alternatives Evaluation Conference)	14-Feb-05	25-Feb-05	10 days
Present F-4	7-Mar-05	18-Mar-05	10 days
AFB Alternative Formulation Briefing	6-Jun-05	5-Aug-05	45 days
Prepare F-5 (Final Draft Report)	5-Dec-05	30-Dec-05	20 days
District Review and Corrections of Draft Report	2-Jan-06	27-Jan-06	20 days
Submit Draft Report to SPD	30-Jan-06	3-Feb-06	5 days
FRC Feasibility Review Conference to SPD	13-Feb-06	24-Feb-06	10 days
Prepare F-6 (Field Level Coordination)	27-Feb-06	10-Mar-06	10 days
Present F-6	13-Mar-06	17-Mar-06	5 days
Prepare Final Report	27-Mar-06	5-May-06	30 days
District Review of Final Report	15-May-06	9-Jun-06	20 days
Corrections to Final Report	26-Jun-06	14-Jul-06	15 days
Print Final Report Documentation	24-Jul-06	11-Aug-06	15 days
F-8 (Submit Final Report to SPD)	4-Sep-06	8-Sep-06	5 days
SPD Review of Final Report	18-Sep-06	6-Oct-06	15 days
Respond to Comments from SPD	9-Oct-06	3-Nov-06	20 days
Prepare DE Notice	23-Nov-06	6-Dec-06	10 days
F-9 (DE Public Notice) on Final Report	7-Dec-06	13-Dec-06	5 days
Submit Final Report to WLRC	25-Dec-06	4-Jan-07	10 days
WLRC Review and Assessment	5-Jan-07	18-Jan-07	10 days
Prepare Prelim. Response to assessment & Prep Fld Mtg.	19-Jan-07	8-Feb-07	15 days

Field Mtg. With WLRC	9-Feb-07	22-Feb-07	10 days
Prepare Final Response to WLRC Assessment	23-Feb-07	8-Mar-07	10 days
Prepare for Senior Reps Meeting	9-Mar-07	15-Mar-07	5 days
Senior Reps Meeting	16-Mar-07	29-Mar-07	10 days
HQ Prepare Chief's Report	30-Mar-07	12-Apr-07	10 days
Chief's Report Signed	13-Apr-07	19-Apr-07	5 days
Prepare ASA Report	20-Apr-07	3-May-07	10 days
OMB Review of ASA Report	4-May-07	17-May-07	10 days
ASA Sends Report to Congress	18-May-07	31-May-07	10 days

6.10 STUDY MANAGEMENT

Table 11 gives a summary of the study management tasks, and schedule. The responsibility for day-to-day technical management of the study lies with the Corps Planning Division in cooperation with the study project manager, Local Sponsor and the other local interests. Study management will ensure that all required tasks and coordination are performed. This task includes such duties as assigning and negotiating study tasks to technical elements, scheduling the study, coordinating between technical elements, monitoring and modifying assigned work items as required, and reviewing results and reports provided by the technical support staff and technical correspondence. Correspondence, inner organizational coordination, and point-of-contact responsibilities are also part of study management. The study manager will organize, set the agenda for, and moderate PDT meetings.

Table 11 Study Management

Task Name	Start Date	Finish Date	Duration
Study Management	16-Jun-03	8-Dec-06	910 days
Prepare for study, Setup Accounts, Issue PRC's	16-Jun-03	20-Jun-03	5 days
Develop Without Project Conditions	11-Aug-03	31-Oct-03	60 days
Direct Development of Alternative Plans & Assessments	1-Dec-03	26-Dec-03	20 days
Evaluate alternatives	29-Dec-03	6-Feb-04	30 days
Direct Refinement of Plans	18-Apr-05	6-May-05	15 days
Define Cost-Sharing Requirements First Cost and O&M	9-May-05	27-May-05	15 days
Define Local Cooperation Requirements	30-May-05	17-Jun-05	15 days
Prepare FRC-TRC Presentations	2-Jan-06	10-Feb-06	30 days
SPD and Wash. Review of Draft Report	15-May-06	4-Aug-06	60 days
Participate in Preparing MFR	7-Aug-06	15-Sep-06	30 days
Participate in Preparing PGM	18-Sep-06	27-Oct-06	30 days
Prepare Revisions per PGM Guidance	30-Oct-06	8-Dec-06	30 days

6.11 PROGRAM MANAGEMENT, PROJECT MANAGEMENT and PROGRAM DEVELOPMENT

Tables 12, 13 and 14 give a summary of the program management, project management and program development tasks, schedule, and costs. The following is a description of these tasks. The Corps project manager is responsible for managing the overall study cost and schedule through use of the PRB system; preparation of present and future budget year submissions; coordination with the Non-Federal sponsor; and preparation of the Project Management Plan, which presents the Federal and non-Federal requirements, costs, and

schedule required for implementation of the recommended plan. The Corps project manager, with assistance from the non-Federal project manager, will monitor expenditures, keep the PMP current, prepare project management reports and SACCR as needed, and report study status and issues to the District Engineer. The project management structure will continue into the pre-construction engineering and design phase, and construction phase.

6.11.1 Updates of PMP

Updates of PMP will include monthly finance and accounting reports regarding expenditures and obligations, executive summary reports for the PRB, schedule and cost changes, and changes to work elements.

6.11.2 Project Management Plan (PMP)

A product associated with the feasibility phase study is the PMP. The PMP describes the project activities during feasibility phase and is a basis for the project cost sharing agreement. A draft Detailed Study Report (DSR) will be included in the PMP.

6.11.3 Program Management, Project Management and Program Development Documents

Table 12, 13 and 14 gives a summary of tasks, schedule and costs during the feasibility phase of the study. At the end of the study, a final audit will be performed.

Table 12 Program Management

Task Name	Start Date	Finish Date	Duration
Program Management	2-Jun-03	28-May-07	1042 days
Receipt of Funds	2-Jun-03	6-Jun-03	5 days
F1 (Initiate Feasibility Report)	16-Jun-03	20-Jun-03	5 days
Manage and Reporting Schedule, Costs and Budget FY3	7-Jul-03	30-Sep-03	62 days
Manage and Reporting Schedule, Costs and Budget FY4	1-Oct-03	30-Sep-04	262 days
Manage and Reporting Schedule, Costs and Budget FY5	4-Oct-04	3-Oct-05	261 days
Manage and Reporting Schedule, Costs and Budget FY6	5-Oct-05	3-Oct-06	260 days
Manage and Reporting Schedule, Costs and Budget FY7	6-Oct-06	16-May-07	160 days
End	28-May-07	28-May-07	1 day

Table 13 Project Management

Task Name	Start Date	Finish Date	Duration
Project Management	23-Jun-03	25-May-07	1026 days
Project Management FY 3	23-Jun-03	26-Sep-03	70 days
Project Management FY 4	6-Oct-03	24-Sep-04	255 days
Project Management FY 5	4-Oct-04	30-Sep-05	260 days
Project Management FY 6	3-Oct-05	29-Sep-06	260 days
Project Management FY 7	2-Oct-06	25-May-07	171 days

Table 14 Program Development

Task Name	Start Date	Finish Date	Duration
Program Development	23-Jun-03	25-May-07	1026 days
Program Development FY 3	23-Jun-03	26-Sep-03	70 days
Program Development FY 4	6-Oct-03	24-Sep-04	255 days
Program Development FY 5	4-Oct-04	30-Sep-05	260 days
Program Development FY 6	3-Oct-05	29-Sep-06	260 days
Program Development FY 7	2-Oct-06	25-May-07	171 days

6.12 SPONSOR'S TASKS

Appendix A gives a summary of the sponsor tasks and schedule. The City of Carpinteria is the local sponsor for the Feasibility Study and is responsible for providing 50 percent of the cost of the study. All of the local sponsor's contribution to the study may be provided as in-kind services. The Sponsor's Study Manager will be responsible for the management of the assigned local in-kind services with respect to the tasks, budgets and schedules; participate in scoping and reviewing study activities and results; coordinating with appropriate officials for budgeting and executing non-Federal funds; reviewing progress and results; and reaching a decision on plan recommendation.

SECTION 7 - QUALITY CONTROL

Based on recent Corps restructuring goals, the quality control of technical findings of the Feasibility Study is to be the full responsibility of District levels. The quality control plan will be developed as part of the feasibility report review materials for in House independent technical review of the report.

The objective of the Quality Control is to provide for an evaluation of the technical products and processes associated with the feasibility study to assure that they comply with law, regulations, and sound technical practices of the disciplines involved.

7.1 GUIDELINES

The guidelines to be applied are based on requirements and procedures outlined in CECW-A Memorandum dated 14 April 1995, subject: Implementation of New Technical and Policy Review Procedures; CESP Regulation No. 1110-1-8, "Quality Management Plan", dated 31 May 1996, and draft SPL OM No. 1105-1-1, "Independent Technical Review Guidelines" dated 12 July 1996. In accordance with these guidelines a technical review team will be established by the District to provide an independent review of study results during the Feasibility Study to assure compliance with applicable regulations, Engineering Regulations and Circulars, Policy Guidance Letters, Engineering Manuals, and other guidance provided by Headquarters and South Pacific Division.

7.2 ROSTER OF THE STUDY TEAM and INDEPENDENT TECHNICAL REVIEW (ITR) TEAM

Upon execution of the Feasibility cost-sharing agreement and initiation of the Feasibility Studies, a list of the members of the Study Team and ITR Team selected from the various organizations will be prepared and provided to the non-Federal Sponsor and South Pacific Division. This list will be periodically updated as changes occur in the team members during the study. In the interest of assuring an adequate and independent review by the review team, the members selected for the review team are (1) considered technical specialist for the function they are reviewing; and (2) have not been involved in the study. It is emphasized that the Independent Technical Review Team will provide their review comments to the Technical Review Leader.

7.3 LIST OF DOCUMENTS TO BE REVIEWED BY ITR TEAM

The ITR Team will perform an independent review of the study results as major products are completed in preliminary draft, draft, and final reports and appendices. These will include the main report which will summarize the study purpose, present and future conditions, problems and needs, plan formulation, recommended plan description, plan implementation, public participation and agency coordination, report conclusions and recommendations, and the Environmental Assessment (EA). Appendices will be prepared for Coastal Engineering, Environmental Studies, Geotechnical Studies, Cost Estimates, Real Estate, and Economics.

7.4 MILESTONES AND SCHEDULE FOR REVIEW ACTIVITIES

In general, the review will be performed as part of the milestones identified for the study, including:

F-2 Review of Without Project Conditions, Problems and Needs, and preliminary plan formulation. Independent Review Team participation as needed to discuss review comments on draft report.

F-3 Review of Plan Formulation, Proposed Recommended Plan, Plan Implementation Requirements. Independent Review Team participation needed to discuss review comments on draft report.

F-4 Complete Evaluation of Final Array of Plans. Review of draft report prior to Field level Coordination. Independent Review Team participation needed to discuss review comments on draft report.

F-5 Draft Report Submitted to SPD.

F-6 Completed Draft Copies made available to Federal, State and Local Agencies. Review of Final Report to be submitted to South Pacific Division and HQUSACE.

Completed Detailed Study Report products will be submitted to the ITR Team at least two weeks prior to the F2, F-3 and F-5 Milestone dates, and five days in advance of the F-5 and F-6 Milestone dates. Comments will be compiled and provided to the study team one week prior to the F-3 and F-4 milestone dates for resolution at the checkpoint meetings. Comments will be provided to the study team two weeks prior to F-6 completion of the Final Report.

7.5 REVIEW DOCUMENTATION

The Review Team Leader and each review team member will maintain documentation of the review process in accordance with the District SPL draft OM. This will include documentation of products reviewed by each discipline, dates of review, and time spent on review. Review comments will be in writing to include comments, and value added analysis on the possible significance of each comment. The Review Team Leader will hold a Review Team meeting to go over and compile those comments considered significant that requires resolution into a report assessment for each review milestone. The assessments will be submitted to the Study Manager for preparation of a response and discussion at the Checkpoint Meetings. At the Checkpoint Meetings, the assessments and responses will be discussed for an agreed upon Required Action on future study effort.

7.6 CERTIFICATION OF TECHNICAL AND LEGAL REVIEW

In accordance with CECW-A Memorandum dated 14 April 1995, subject: Implementation of New Technical and Policy Review Procedures, the processing of the final report will include certification of technical and legal review, with appropriate documentation on major concerns raised by the review team, and actions that were taken to resolve these concerns.

7.7 COST ESTIMATE FOR INDEPENDENT TECHNICAL REVIEW

The estimated cost for Independent Technical Review is \$81,000.

SECTION 8 - STUDY COST ESTIMATE

Table 15 presents a summary of the Federal and non-Federal study costs by Fiscal Year. All feasibility study costs are required to be cost-shared between the Corps and the non-Federal sponsor on a 50-50 basis. Further, the non-Federal sponsor may provide a maximum of half of its total share as in-kind services toward the study. The feasibility study cost estimate for the Carpinteria Shoreline Feasibility Study is \$2,200,000. This includes a \$186,300 overall contingency for FY 2003 thru FY 2007 based on Corps budget regulations.

The Corps will provide periodic reports to the Local Sponsor. The non-Federal Sponsor will provide the Corps, on a quarterly basis, similar finance and accounting data that would record the work-in-kind efforts by the non-Federal Sponsor.

Table 15 Feasibility Study Cost Estimate

DESCRIPTION	FY03	FY04	FY05	FY06	FY07	TOTAL	IN-KIND
PROGRAM MANAGEMENT	10,500	7,000	7,000	7,000	3,500	35,000	5,250
STUDY MANAGEMENT	23,624	27,470	17,000	30,000	15,000	113,094	18,000
COST ENGINEERING	0	40,600	0	0	0	40,600	5,400
PROGRAM DEVELOPMENT	7,500	7,500	7,500	7,500	5,000	35,000	5,250
GEOTECHNICAL	32,330	11,600	13,800	0	0	57,730	7,530
COASTAL ENGINEERING	104,826	388,000	151,000	0	0	643,826	75,000
INDEPENDENT TECHNICAL REVIEW	30,000	30,000	30,000	0	0	90,000	9,000
ECONOMICS	18,950	51,000	10,200	0	0	80,150	5,100
REAL ESTATE	10,000	29,700	25,000	0	0	64,700	0
ENVIRONMENTAL	32,000	169,000	198,000	0	0	399,000	64,000
PLAN FORMULATION	22,690	61,910	0	0	0	84,600	12,690
PUBLIC INVOLVEMENT	22,500	15,000	0	0	32,500	70,000	10,500
DETAILED STUDY REPORT	0	51,850	35,000	67,500	65,650	220,000	34,350
PROJECT MANAGEMENT	19,000	17,250	17,250	17,250	9,250	80,000	12,000
SUBTOTAL	333,920	907,880	511,750	129,250	130,900	2,013,700	264,070
CONTINGENCY 10% (Approximate)	30,894	83,993	47,345	11,958	12,110	186,300	
GRAND TOTAL	364,814	991,873	559,095	141,208	143,010	2,200,000	
FEDERAL SHARE	182,407	495,937	279,548	70,604	71,505	1,100,000	
SPONSOR SHARE	182,407	495,937	279,548	70,604	71,505	1,100,000	

SECTION 9 - MILESTONES AND STUDY SCHEDULE

9.1 DESCRIPTION OF MILESTONES

A system of milestones has been established to help monitor and manage study completion. The following is a highlight of each milestone.

9.1.1 Initiate Feasibility Study (F1)

The feasibility work allowance and non-Federal cash contribution is received, and first Corps charges are made.

9.1.2 Public Workshop (F2)

The purpose of the public workshop is to present results of the reconnaissance study and the Project Management Plan to describe the feasibility study, and to solicit public views and issues to be addressed in the study including scoping of the EA with FONSI with ROD. Background material in the form of the "F2 Report" will be sent to ITR Team 2 weeks prior to the conference. A memorandum will be prepared documenting the required actions needed to be addressed in further plan development studies.

9.1.3 Progress Review Conference (F3)

The purpose of the F3 conference is to review study findings to date concerning refinement of present and future study area conditions, problems and needs and the establishment of planning objectives. It also includes determining viable alternative plans warranted to be further developed during the study, to meet the planning objectives based on preliminary analysis of impact of alternatives including costs, economic benefits, and social, environmental, and regional impacts. This meeting will be a key decision point as the issue of Federal and non-Federal interest will be revisited. Interim conclusions from the F3 Conference will indicate the feasibility and likelihood of project implementation. Based on recent guidance from HQUSACE, the F3 Conference will also include a review of the Project Management Plan to determine and modify any significant direction or requirements for the feasibility study. This will include reviewing the scope of the study, cost, and schedule. At this milestone, Federal and non-Federal sponsors may wish to review their respective commitments to completion of the study, if they perceive there is a low probability of a positive study recommendation.

Any proposed non-Federal interests' preferred alternative will be identified. Background material in the form of the "F3 Report" will be sent to ITR Team and SPD and HQ at least 2 weeks prior to the conference. A memorandum will be prepared documenting the required actions needed to be addressed in further plan development studies.

9.1.4 Alternatives Evaluation Conference (F4)

The purpose of the F4 conference is to mark the completion of the evaluations of the final array of plans and prepare for the alternative formulation briefing that will be held with Headquarters, U.S. Army Corps of Engineers (HQUSACE) and the Office of the Assistant Secretary of the Army for Civil Works (OASACW)). The study team will present a pre-draft report containing the evaluation of the final array of alternatives that will be presented in the final feasibility study. At this conference, the study's cost sharing sponsor will summarize the views of the agency and identify any issues that must be resolved prior to selection of a locally preferred plan. The federal interest will also be reviewed. The conference will reach a

consensus that the evaluations are adequate to select a locally preferred plan and the NED plan.

Additionally, the F4 conference will allow identification of policy issues of concern that will be presented at the Alternative Formulation Briefing (AFB). Background material in the form of the "F4 Report" will be sent to ITR Team at least 2 weeks prior to the conference. A memorandum will be prepared documenting the required actions needed to be addressed in further plan development studies.

9.1.5 Alternative Formulation Briefing (AFB)

The alternative review process was established to save time and costs in preparation and review of the detailed study report, and to facilitate early Washington level acceptance of the plan formulation. This process separates the review of the project from the review of the report by preceding the review of the draft report with an AFB. The AFB will be scheduled when the district is ready to present the formulation of the alternatives and identify the NED plan and the tentatively selected plan. The Washington level participants will seek to confirm that the plan formulation and selection process, the identified preferred plan, and definition of Federal and non-Federal responsibilities, conform to current policy guidance. The goal is to identify and resolve any policy concerns that would otherwise delay or preclude approval of the draft report, and thus provide an opportunity for the district to make necessary adjustments prior to submitting the draft report. If identified policy concerns are sufficiently resolved at the AFB, the AFB Guidance Memorandum will instruct the District to submit the draft report for Washington level policy compliance review concurrent with public release of the draft EA. This will allow the district to save the time required for sequential policy compliance and public reviews, including potential revisions/review iterations frequently needed to achieve an acceptable report. The AFB is not mandatory; however, districts are encouraged to hold one whenever they are uncertain that projects have been formulated in accordance with policy and that the recommended plan to be presented in the draft report will have Army support. In carrying out its quality assurance role, the division may decide that an AFB is needed for a particular study.

9.1.6 Submit Draft Report to SPD (F5)

The final draft report incorporating responses to required actions from the AFB is submitted to South Pacific Division and HQUSACE

9.1.7 Feasibility Review Conference (FRC)

The Feasibility Review Conference is intended to resolve any significant issues resulting from Division and Washington review of the draft feasibility report and to provide specific guidance on actions needed to be taken to complete the final draft feasibility report. The meeting is normally held in the District office or the immediate project area and will include a field trip to the project site. The Washington-level review team will evaluate the feasibility report based primarily to assure consistency and adequacy of complying with Corps policy and any specific guidelines provided during the course of the study. Representatives from Office of the Assistant Secretary of the Army for Civil Works, OASA(CW), HQUSACE, Division, District, and the local sponsor as well as other agencies will participate in the FRC. The FRC will be held and the Feasibility Review Conference Project Guidance Memorandum (FRC-PGM) prepared by HQUSACE will document the issues and required actions needed to finalize the Feasibility Report.

9.1.8 Field Level Coordination (F6)

At the same time the draft report is sent to South Pacific Division and Headquarters, the draft feasibility report and NEPA/CEQA document is distributed for formal coordination with interested agencies and other public interests. Copies of the draft feasibility report will be made available to Federal, State and local agencies as well as interested publics. A notice of public review including information package that summarizes the findings, conclusions, and recommendations will be sent to a general public mailing of interested parties, which will also invite all interests to attend a public meeting on the draft report and proposed recommendation. The notice of public review is expected to allow a 45-day period for comment in accordance with NEPA and CEQA guidelines. Extensions of the review period will be considered and may be granted by the District Engineer if adequate justification is provided.

9.1.9 Final Public Meeting (F7)

The District will present results of the study, conclusions, and recommendations to the public at a formal public meeting. The meeting will include opportunities for all attendees to present questions, concerns, and opinions with the study results, and allowing all interests to interchange information with District and local sponsor representatives regarding any concerns with the proposed recommendations. A transcript of the meeting will be prepared and a summary will be developed to be included as part of the study document.

9.1.10 Submit Final Report to SPD (F8)

The District will submit the final feasibility report in accordance with guidance in ER 1105-2-100 and include technical documentation report, mailing list, and other requirements for Division Engineer's Public Notice.

9.1.11 Division Engineer Public Notice (F9)

The Division Engineer will complete his review of the feasibility report, issue the public notice and transmit the final feasibility report to HQUSACE for Washington-level processing.

9.2 FEASIBILITY STUDY MILESTONE SCHEDULE

Table 16 presents the milestone schedule for completing the Feasibility Study. Detailed schedules of each activity is presented in the work breakdown section of the PMP and on a Microsoft project chart. The final feasibility report including EA is scheduled to be completed in approximately 30 months after initiation of the feasibility study. After the final feasibility report and EA is submitted for Washington-level review, it is expected that review and processing the feasibility report through Washington-level review to Congress will require up to 6 months. A system of milestones has been established to help monitor and manage study completion.

Table 16 Feasibility Study Milestone Schedule


DESCRIPTION	DATE
F1 – INITIATE STUDY	July 2003
F2 – PUBLIC WORKSHOP	October 2003
F3 – PROGRESS REVIEW CONFERENCE	September 2004
F4 – ALTERNATIVE EVALUATION CONFERENCE	March 2005
AFB – ALTERNATIVE FORMULATION BRIEFING	June 2005
F5 – PREPARE FINAL DRAFT REPORT	December 2005
FRC – FEASIBILITY REVIEW CONFERENCE	February 2006
F6 – FIELD LEVEL COORDINATION	March 2006
F7 – FINAL PUBLIC MEETING	May 2006
F8 – FINAL REPORT TO SPD	September 2006
F9 – DIVISION ENGINEERS NOTICE	December 2006
SUBMIT FINAL REPORT TO WLRC	December 2006
ASA REPORT TO CONGRESS	May 2007

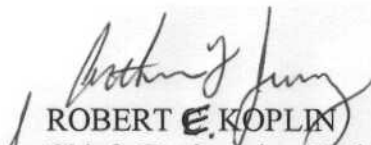
STATEMENT OF CERTIFICATION

**Project Management Plan
Carpinteria Shoreline
Feasibility Phase
Los Angeles District, Corps of Engineers**


This is to certify that the undersigned have reviewed, and concur in the scope, structure, and cost estimate for the subject study based on current price and salary levels.

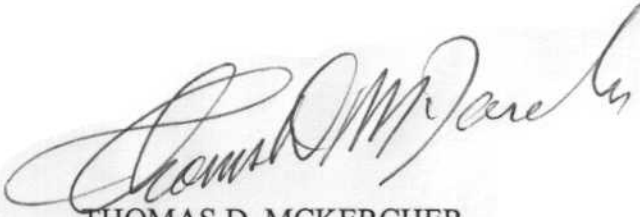
Los Angeles District

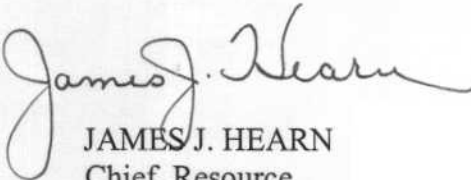
for 
BRIAN M. MOORE
Deputy District Engineer
(Project Management)

for 
ROBERT E. KOPLIN
Chief, Engineering Division

for 
RUTH BAJZA VILLALOBOS
Chief, Planning Division

for 
GEORGE L. BEAMS
Chief, Construction-
Operations Division


THOMAS D. MCKERCHER
Chief, Contracting Division

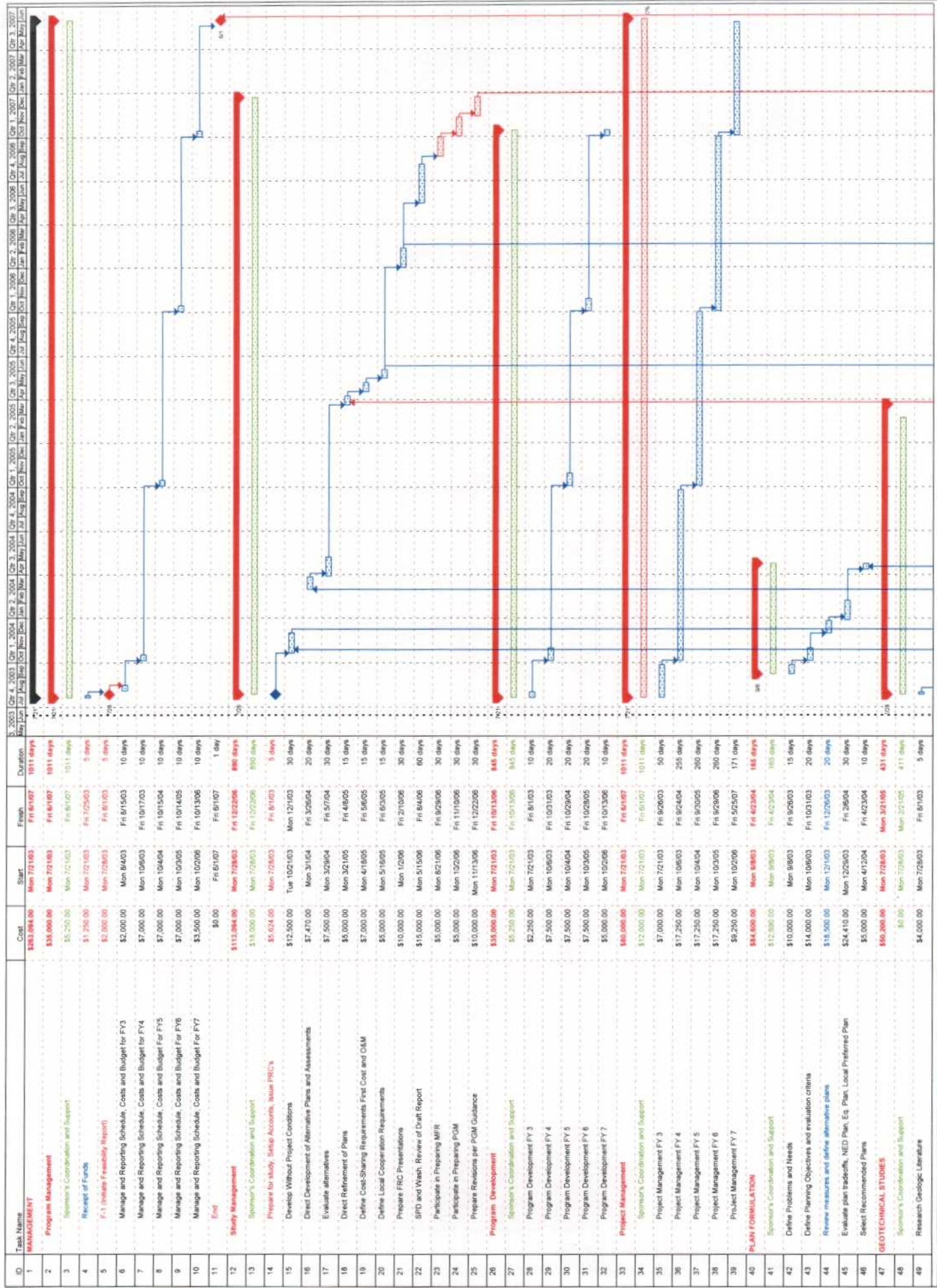

JAMES J. HEARN
Chief, Resource
Management Office


THERESA M. KAPLAN
Chief, Real Estate Division

FOR 
LAWRENCE N. MINCH
District Counsel
Office of Counsel

APPENDIX A

GANTT CHARTS



ID	Task Name	Cost	Start	Finish	Duration
50	Evaluate Sponsor Geotechnical Data	\$600.00	Mon 8/11/03	Mon 8/11/03	1 day
51	Laboratory Testing and analysis	\$14,000.00	Mon 8/18/03	Thu 9/4/03	14 days
52	Travel for sampling/drilling, etc.)	\$1,200.00	Mon 8/18/03	Mon 9/15/03	8 days
53	Identify Stone and Concrete Sources	\$800.00	Mon 9/22/03	Mon 9/22/03	1 day
54	Coordination with Planning and Sponsor	\$4,000.00	Wed 9/24/03	Tue 9/30/03	5 days
55	Planning the Drilling Program (Scope of Work)	\$8,000.00	Mon 9/29/04	Fri 10/5/04	10 days
56	Prepare Drilling Logs	\$2,800.00	Mon 10/12/04	Fri 10/18/04	5 days
57	Support Preparation of Progress Review Appendix	\$800.00	Mon 10/12/04	Mon 10/12/04	1 day
58	Prepare F4F-S draft appendix	\$9,000.00	Mon 10/19/04	Fri 11/5/04	10 days
59	F4F-S ITR	\$1,800.00	Mon 11/15/04	Tue 11/22/04	2 days
60	Geotechnical Branch Review	\$1,800.00	Wed 11/24/04	Thu 11/24/04	2 days
61	Final Review and Preparation of Appendix	\$1,600.00	Fri 11/26/04	Mon 12/6/04	2 days
62	COASTAL ENGINEERING STUDIES	\$643,326.00	Mon 12/13/04	Fri 1/1/05	536 days
63	Task Initiation and Research	\$16,344.00	Mon 12/13/04	Fri 1/1/05	10 days
64	Perform Beach Profiles	\$35,000.00	Mon 1/11/05	Fri 1/22/05	30 days
65	Ortho photos and 0.3m Photogrammetry	\$40,000.00	Mon 1/11/05	Fri 1/22/05	30 days
66	Field Studies	\$192,451.00	Mon 1/25/05	Fri 2/18/05	60 days
67	Baseline Coastal Processes	\$161,148.00	Mon 1/25/05	Fri 2/18/05	60 days
68	Preliminary Design	\$72,751.00	Mon 2/1/05	Fri 2/18/05	40 days
69	Recommended Plan Detail Design	\$113,565.00	Mon 2/1/05	Fri 2/18/05	30 days
70	Risk and Uncertainty Analysis	\$39,126.00	Mon 2/1/05	Fri 2/18/05	30 days
71	Constructability Analysis	\$4,789.00	Mon 2/1/05	Fri 2/18/05	10 days
72	Operation and Maintenance Analysis	\$3,433.00	Mon 2/1/05	Fri 2/18/05	10 days
73	Report Preparation and Processing/Review	\$80,337.00	Mon 2/1/05	Fri 2/18/05	30 days
74	Project Management Plan Input	\$4,892.00	Mon 2/1/05	Fri 2/18/05	30 days
75	ECONOMIC STUDIES	\$80,156.00	Mon 2/1/05	Wed 2/23/05	43 days
76	Supervision and Support	\$9,600.00	Mon 2/21/05	Tue 2/28/05	482 days
77	Socioeconomic Data Collection	\$850.00	Mon 2/21/05	Fri 2/25/05	5 days
78	In-kind Services (Socioeconomic Data Collection)	\$1,700.00	Mon 2/21/05	Fri 2/25/05	15 days
79	Conduct Structural Inventory	\$1,700.00	Mon 2/21/05	Wed 2/23/05	3 days
80	Determine Depreciated Replacement Values for Residential Structures	\$1,700.00	Thu 2/24/05	Mon 2/28/05	3 days
81	In-kind Services (Infrastructure Survey)	\$1,700.00	Tue 2/29/05	Mon 3/6/05	15 days
82	In-kind Services (Survey Historical, Emergency and Clean-Up Damages)	\$1,700.00	Tue 2/29/05	Mon 3/6/05	15 days
83	Develop Damage Relationships and Damage Model	\$5,100.00	Tue 3/7/05	Mon 3/14/05	10 days
84	Evaluating Existing Conditions (W/O Damages)	\$8,500.00	Mon 3/14/05	Fri 3/18/05	15 days
85	Evaluate Recreational Resources	\$8,500.00	Mon 3/14/05	Fri 3/18/05	15 days
86	Compute Benefits Alternatives	\$8,500.00	Mon 3/14/05	Fri 3/18/05	15 days
87	Evaluate Recreational Resources With Project	\$3,400.00	Mon 3/14/05	Fri 3/18/05	5 days
88	Complete Annual Cost	\$5,100.00	Mon 3/14/05	Fri 3/18/05	10 days
89	Calculate Net Benefits and Benefit Ratio	\$3,400.00	Mon 3/14/05	Fri 3/18/05	5 days
90	Meeting and Coordination	\$3,400.00	Mon 3/14/05	Fri 3/18/05	5 days
91	Report Preparation/Documentation	\$1,700.00	Mon 3/14/05	Wed 3/16/05	3 days
92	Writing Draft Reports	\$3,400.00	Mon 3/14/05	Fri 3/18/05	5 days
93	Respond to Comments	\$5,100.00	Mon 3/14/05	Fri 3/18/05	10 days
94	Update of Economic Data	\$3,400.00	Mon 3/14/05	Fri 3/18/05	5 days
95	Writing Final Report	\$1,700.00	Mon 3/14/05	Wed 3/16/05	3 days
96	REAL ESTATE STUDIES	\$64,706.00	Thu 3/17/05	Wed 4/6/05	300 days
97	Coordination	\$5,000.00	Thu 3/17/05	Fri 3/18/05	7 days
98	Without Project Conditions	\$10,000.00	Mon 3/21/05	Tue 3/22/05	12 days
	Summary				

Project Name: Capricornia Shoreline

Date: Fri 6/13/03

Task

Critical

Milestone

Summary

Page 2

